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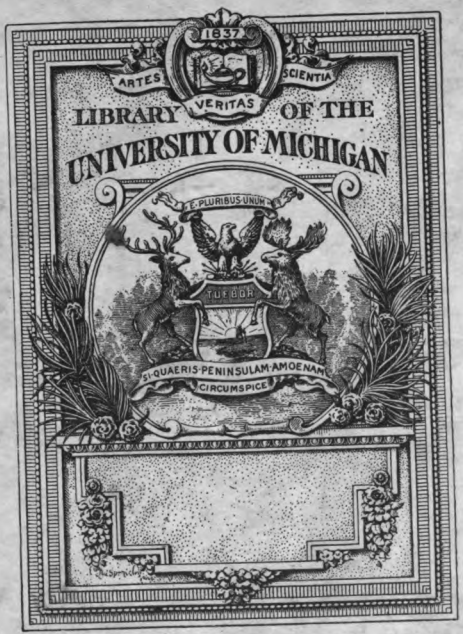

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WESTMINSTER HOSPITAL REPORTS

EDITED BY

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E. PERCY PATON

VOLUME XII.

London:
HENRY J. GLAISHER,
57 WIGMORE STREET, CAVENDISH SQUARE, W.

1901.

Published at 6*s. net. Price to Subscribers,* 5*s.*

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CONTENTS.

PAGE.

1. *In Memoriam* John Baptiste Potter, M.D., F.R.C.P., Obstetric Physician to the Hospital. By W. H. ALLCHIN, M.D., F.R.C.P. - - - - - 1

2. The Bacteriological Examination of Drinking-water. By Major A. M. DAVIES, M.R.C.S., D.P.H.Camb. 9

3. A Sketch of the History and Pathogenesis of Sugar Excretion. By FREDERICK S. PALMER, M.D., M.R.C.P. - - - - - - - - - - 33

4. The Care, Treatment, and Training of Imbecile Children. By Rev. C. M. JENKINS and F. R. P. TAYLOR, M.D., B.S.Lond. - - - - - 41

5. The Surgical Treatment of Appendicitis, exemplified by a Retrospect of fifty consecutive operations. By JAMES SWAIN, M.S., M.D.Lond., F.R.C.S.Eng. - 49

6. Remarks on the Connection which exists between the Nose and Throat and the Generative System. By F. DE HAVILLAND HALL, M.D., F.R.C.P. - - 65

7. Two Cases of Division of the Symphysis Pubis at Full Term Labour. By ROBERT SANDERSON, M.B., B.Ch.Oxon. - - - - - - - - - 71

8. The Treatment of Strabismus. By GUSTAVUS HARTRIDGE, F.R.C.S. - - - - - - - 75

9. A Case of Bi-temporal Hemianopsia due to basal fracture of the skull. By G. BROOKSBANK JAMES, F.R.C.S. - - - - - - - - - 79

Digitized by Google

PAGE.

10. Notes on some Cases of (? Malarial) Iritis, occurring in persons the subjects of Malarial Fever and relieved by quinine. By ARTHUR T. WHITE, L.R.C.P., M.R.C.S. - - - - - - - 83

11. Cases under the care of Mr. SPENCER. (1) Extensive Prolapse of the Rectum and Uterus in Old Women, due to Ovarian Cysts. (2) A Case of Persistent Nocturnal Enuresis in a female, treated by torsion of the urethra (Gersuny's Operation). (3) Congenital Hypertrophy of the Neck of the Bladder in a boy - - - 91

12. Picrotoxin and Senecin. By Dr. MURRELL - - 97

13. The Surgical Treatment of Paralysis by Tendon-transplantation and Arthrodesis. By A. H. TUBBY, M.S., F.R.C.S. - - - - - - 103

14. A Case of Polypoid Fibroma of the Pylorus successfully removed by operation. By JAMES SWAIN, M.S., M.D.Lond., F.R.C.S.Eng. - - - - - 109

15. Two Cases of Prolapse of the Rectum treated by excision. By E. PERCY PATON, M.S., F.R.C.S. - 115

16. A Case of Ulcerative Colitis. By R. G. HEBB, M.D., F.R.C.P. - - - - - - - - - - 119

17. Medical Registrar's Report for 1899. By BERTRAM ABRAHAMS, M.D., M.R.C.P. - - - - - - 123

18. Surgical Registrar's Report for 1899. By E. CANNY RYALL, M.R.C.S. - - - - - - - - 129

19. Report of Cases in "Arden Ward" for 1899. By A. R. ROCHE, M.R.C.S. - - - - - - 155

20. Medical Registrar's Report for 1900. By H. T. BARRON, M.D. - - - - - - - - - 161

21. Surgical Registrar's Report for 1900. By E. CANNY RYALL, M.R.C.S. - - - - - - - - 167

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PAGE.

22. Report of Cases in "Arden Ward" for 1900. By A. R. ROCHE, M.R.C.S. - - - - - - 193

23. Report of the Pathological Department. By W. LAZARUS BARLOW, M.D., F.R.C.P. - - - 201

24. The Clubs' Union. By WILLIAM PAYNE, M.B. - 255

25. The Hospital and School - - - - - 257

26. Past Students of the Westminster Hospital - - 273

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The Editors will be glad to receive for insertion in the next volume of the Hospital Reports short Accounts of interesting and rare cases from old Westminster men. They suggest that, in order that these cases may not be forgotten, the notes should be sent in whilst the cases are still recent.

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In Memoriam

JOHN BAPTISTE POTTER, M.D., F.R.C.P.

Obstetric Physician to the Hospital.

By W. H. ALLCHIN, M.D., F.R.C.P.

John Baptiste Potter was born in London, on December 23rd, 1839, the youngest child of Cipriani Potter, a famous musician of his day and for many years Principal of the Royal Academy of Music. He received his early education at Kensington Grammar School, then under the head-mastership of Dr. Payne Smith. There he appears in no way to have distinguished himself among his schoolfellows, and was more or less delicate even as a lad. A strong inclination towards the medical profession was opposed rather than encouraged in his home circle, and it was only with difficulty that he made a start towards the attainment of his desire, on leaving school at the end of 1856, by becoming an apprentice to Dr. Sloman at Farnham in Surrey. Dr. Potter, in after years, frequently spoke in praise of the information he gained thereby in prescribing and dispensing and in the numerous little details of practice, which the consultant of the present day too often neglects as much from ignorance as anything else, and a knowledge of which would frequently enhance the value of his advice or at least increase its facility of application.

In October, 1859, Potter entered the Medical School of University College, where he remained until he took the M.R.C.S. in 1862, after the then necessary period of four years' study. Here he came under the influence of such masters of Medicine as Walsh, Garrod and Jenner, with Erichsen, Quain and Marshall in Surgery, Sharpey and Ellis

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in Physiology and Anatomy, and that able, though now half-forgotten, obstetrician Dr. Edward Murphy. His quiet and retiring disposition, whilst firmly set upon entering on practice in its higher walks, kept him somewhat aloof from his class-mates and he made but few friends; nor did his name appear in the prize lists and it was among the less known students that he found a place. With becoming qualified, his father thought that enough had been done, and again opposition was made to any further time being expended in study; but the young man's aspirations were not so easily subdued, and he managed to proceed to Edinburgh, which he left in 1863, with his Doctor's degree.

For the next few years, like most young physicians who have not the opportunity of at once becoming a member of the staff of a large hospital, he filled in his time by travelling with a patient, a short spell of work at a children's hospital, and, as resident medical officer to the Birmingham Lying-in Hospital, being in London during the cholera epidemic of 1866, in connection with which he did some work.

He started practice in London at first in Hertford Street, Mayfair, from which he very soon removed to Maddox Street, Regent Street, where he remained until 1872, when he moved to 20, George Street, Hanover Square, and where he remained until his death. In the same year he married Celina, daughter of Alfred Blyth, of Westbourne Terrace, by whom he left a son and two daughters. During part of this period he was Physician to the Chelsea, Brompton and Belgravia Dispensary, and also Physician-Accoucheur to the St. George's and St. James's Dispensary, this being the first appointment in the special line he subsequently followed.

Towards the end of 1869, the Governors of the Westminster Hospital determined to increase their staff by the appointment of an Assistant Obstetric Physician, the senior position being in the hands of Dr. Frederic Bird. Two applicants for the office replied to the advertisement—Dr. Potter and Dr. Edis, the latter an old student of the Westminster Hospital. On December 28th both gentlemen were admitted as candidates, and were informed they might enter on the contest, which then consisted in canvassing some hundreds of governors, a costly and troublesome proceeding. The two

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gentlemen withdrew from the board-room and in a few minutes a friend of one of them was authorised to announce that Dr. Edis had withdrawn his name, leaving Dr. Potter master of the field. This arrangement, quite as satisfactory as the contest would have been, was arrived at by the candidates agreeing to abide by the result of a spun coin, and Dr. Edis lost the toss. Such methods read somewhat quaintly in these days.

With his connection with Westminster Hospital, Dr. Potter entered on his life's work, to which he put almost all else secondary, and for which he never spared himself; as he said to the writer a few days before his death, when spoken to about giving it up, "that I can't do: it is my greatest pleasure." Between himself and Dr. Frederic Bird an acquaintance, that commenced with his application for the Hospital appointment, soon developed into a warm friendship that was only terminated by the death of the latter in 1874, whereon Dr. Potter succeeded to the full Physiciancy with charge of the in-patients, and "Arden" Ward became the scene of his future labours. Second only, but yet at some distance from his devotion to the Hospital, was the interest he took in the affairs of the Obstetrical Society, of which he became a Fellow in 1864, and a Member of its Council in 1872; from which time he continued to be one of its most valuable officials, whether as Librarian, Treasurer, Examiner of Midwives, or Vice-President, and filling in 1885-7 the Presidential chair. His contributions to the Transactions of the Society or even to its discussions were brief and rare, but few took a higher position or were more attentively listened to than he, when it was a question of finance or of business procedure. He was actively concerned with the transfer of the Society and its extensive Library from the rooms in Berners Street to those in the Royal Medico-Chirurgical Society's house in Hanover Square, and his period of Presidency was rendered memorable by coinciding with the split which resulted in the foundation of the Gynæcological Society; and was marked by an unpleasant incident associated with the public conduct of one of the Fellows, which came to be the subject of professional investigation, conducted by Dr. Potter with great courtesy

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and tact. His unusual business capacity led to his services being sought by more than one Society, and much of the success of the Edinburgh University Graduates' Club, of which he was one of the earliest members, was attributed to his prudent advice. He was eminently cautious and safe in procedure, and speculation or fanciful proposals received no countenance from him. At the time of his death, he was, and had been for some years, a trustee and treasurer of the Society of Widows and Orphans of Medical Men; and for a long period he had managed the affairs of the small dining club of his Hospital colleagues, and the excellence of his results, with a yearly increasing balance out of a small subscription, was an annual subject of surprise. He was Consulting Physician-Accoucheur to the Western Dispensary, Westminster, and from 1868 was Physician to the Royal Society of Musicians. In virtue of his position as a teacher in a London medical school, he became examiner in his special subject at the Conjoint Board of the Royal Colleges of Physicians and Surgeons, but his duties in that capacity were confined to these institutions.

Such in brief is an epitome of Dr. Potter's professional career. It is of the man himself, however, rather than of what he did, that the memory will remain to those who knew him. It is not as a teacher, or as an examiner, that he will be remembered by students, nor as a contributor to scientific and clinical medicine that he will be known; nor is his name attached to any modification of forceps or other instrument. Rather will his recollection be of a kindly courteous gentleman who spared no pains to do a kindness, and sought no return—not even thanks; and yet in one respect, and that no small one, will those who followed him in his instruction entertain a grateful remembrance of him—and that was, of his behaviour to the poor patients under his care. He was very emphatic in impressing on his students that a delicacy of conduct and consideration for the feelings of the patients was as much due to them as to those more highly placed—a lesson that unconsciously bears fruit in after life. How carefully this was observed, the devoted Sister of "Arden" ward, who had attended the Physician so many years, could bear testimony. Conscientious and

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thorough in the performance of what he undertook, or of such duties as the office he might hold imposed upon him, his work was done quietly and without show, saying in as few words as possible what he had to say, and keeping strictly to the point; a few words, an almost epigrammatic turn of phrase, with a significant twinkle of his eye and pleasant smile conveyed to the listener his objection to what had been urged. For it was very much as an objector that he oftenest appeared in discussion, his excessive caution and clear recognition of the other side of the question led him frequently to appear to be holding an adverse view to that which he really did. It must be confessed that this was apt to diminish the value of his opinions when practical action had to be taken—or at least it may be said that no one who followed his advice could be accused of acting rashly. In the field of his own special line, his natural habit of mind was associated with an extreme hesitancy in adopting the newer and bolder methods of treatment and practice; and of meddlesome gynæcology he had a healthy and active abhorrence. It would probably be said that these inclinations prevented his availing himself to the full of the legitimate developments of his speciality, if not in his own practice at least in his teaching in the lecture theatre and by the bedside. Of innovations he was ever sceptical, sometimes perhaps when their proved value might have justified acceptance; but a long experience of the failure of many vaunted improvements gave him a ground for his cautious nature to assert itself. As exemplifying his views, the folwing remarks from his Presidential Address to the Obstetrical Society in 1887, at the termination of his two years of office, may be quoted:—

"The whole question of uterine pathology is far too large a one to enter into here, even had we the requisite time at our disposal. To attempt to enter into various theories that have from time to time given rise to different modes of treatment, would be a perplexing and unprofitable task. Each seems to reign for a short time, only to be cast aside and replaced by some other, and now the tendency seems to grow more and more surgical, until at last to some minds abdominal section, and the removal of internal organs, seems the panacea for all

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the evils that woman is heir to. To the indiscriminate use of these procedures, we cannot give our adhesion, and especially do we object to the heroic surgical treatment of hysteria, that chameleon disease which still claims so much sympathy and treatment at our hands. Even statistics on these matters, however carefully tabulated, have to be received with caution; the distinction between cases that have recovered, or become well, and those that can be truly said to have only just escaped death, or have lived too frequently with their sufferings unrelieved, has not always been clearly shown. In estimating these matters, much must depend on character. A reputation for truth and logical precision is of more permanent value here than the statement of brilliant results that will not bear the test of investigation. If I have spoken strongly on this matter, it is owing to the fear that some may be apt to forget the sacredness of human life in their zeal for operating, and this must be my excuse." It will be readily imagined that this was not the language that recommended itself to the enthusiast who but half considered the cost, or only half appreciated the risks of the course he was bent on; nor was it such as would have been used by one who "played to the gallery."

A man of few and simple tastes, he found his amusements in his home. He was fond of music and was no mean performer, with an interest in old books, especially of a topographical character. For many years his annual holiday was spent at Lyme Regis, where walking formed his chief occupation. That he was for a considerable period churchwarden at St. Philip's, Regent Street, to the late Rev. Harry Jones, is a sufficient index of his broad churchmanship.

The physical delicacy of his earlier days pursued him more or less as a man. Some six years ago, he suffered from an obscure illness, from which, though he apparently recovered, he never regained such health as was his at his best, and for the past twelve months had very obviously failed to those who daily saw him, though it was not so apparent to those he came across in the pursuance of his work. Of a cheerful and affectionate disposition, he became somewhat apathetic and despondent, and his final illness attacked a frame of enfeebled resisting power. Within a short three

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weeks of his end, he attended a meeting of the council of the Obstetrical Society, and he roused himself from a two days' rest in bed to visit his ward, from which he returned home not to leave it again till he was carried, in the vain hope that some relief might be afforded, back to the same hospital he loved so well, and that he left only for his grave. Quietly at early morning of Sunday, December 30th, 1899, he died in the presence of his devoted wife and children, nursed with affectionate care by those among whom he had worked so long, and mourned by all. After a brief service in the Hospital Chapel, his remains were laid to rest at Hendon, a spot of which he was very fond, and was frequently in the habit of visiting on a spare summer afternoon, and where several of his friends—among them, Dr. Bird—were buried.

W. H. A.

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THE BACTERIOLOGICAL EXAMINATION OF DRINKING WATER.

By A. M. DAVIES, M.R.C.S., D.P.H.Camb.

Sanitary Officer and Bacteriologist, Army Head-Quarters, India; late Assistant Professor of Hygiene, Army Medical School, Netley; formerly House Physician, Westminster Hospital.

The following pages are the outcome of a study of this subject for several years, and particularly refer to the results of the writer's experience in the examination of water supplies in all parts of India.

I.—Collection of Samples.

Special precautions must be taken to obtain and maintain the sterilisation of the vessel in which the sample is taken. The sterilisation may be effected by placing a flask in the hot-air steriliser, plugged with cotton-wool, and kept at 150° C. for two hours: if this apparatus is not available, the flask may be rinsed out with acidulated water, then with pure water, then with a 5 per 1000 solution of perchloride of mercury, then with alcohol, and finally with sterilised water. The corks used should be disinfected in the same way, and held in the flame of a spirit lamp at the moment of corking.

In ordinary cases it is sufficient to use clean white glass bottles with new corks: whisky or brandy bottles do very well; both bottles and corks require to be well sterilised discontinuously by boiling or steaming three times: the cork should be tied over with clean paper. On taking the sample, the bottle should first be well washed out with the water, and care must be taken to dip the mouth of the bottle well below the surface of the water, if from a stream or reservoir; if from a

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tap, the water must be let run for a few minutes before collection: neither the cork nor the mouth of the bottle should be soiled in any way. Subsequent exposure to sun or any heat must be carefully avoided.

The quantity required for a full examination is about one gallon (4½ litres).

The following points should be noted:—Time the sample is taken: temperature of the water at the time: clearness or turbidity of the water. A distinctive label should be placed on each sample immediately. The examination should be made as soon after as possible, as the number of germs increases rapidly within the first few hours; and during this time the water should be kept at as low a temperature as possible; if transported to a considerable distance, or perforce kept some time before examination, a special refrigerating case should be used to contain the flasks or tubes. Mr. W. C. C. Pakes, of Guy's Hospital, has devised a convenient box for this purpose (obtainable from Baird and Tatlock, Cross Street, Hatton Garden, E.C.: see *Public Health*, March, 1900).

II.—Quantitative Examination.

For ordinary occasions the simplest and quickest method is, having well shaken the bottle containing the sample, to sow from 0.1 c.c. to 1 c.c., according to the character of the water, into a melted agar tube (cooled down to slight warmth), shake gently but thoroughly, and place the tube on its side to set: incubate at 37° C., and count the colonies with a lens after 12, 24, and 48 hours. Prepare a similar tube with gelatine, and keep at room temperature (or at 20° C.) for three days or more. Two or more tubes of each should be prepared and an average struck. Of course the tubes may be poured on to plates or Petri dishes to examine the colonies with a low power, but merely for enumeration it is not necessary. In hot climates where the use of gelatine is impracticable, or very difficult, the counting must be done in agar, and had better be done at the standard incubation temperature of 37° C., but it is desirable to count both the organisms that can grow at the ordinary room temperature, and those that can grow at the blood-heat. The latter are naturally of more importance from the hygienic

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standpoint, as they can survive and probably multiply within the human organism.

It is not possible to lay down exact standards as to the permissible numbers of germs in a usable drinking-water. The following table shows the wide variation that exists in water from different sources.

Micro-organisms per cubic centimetre.

Thames at Hampton, Jan., 1886	45,000
„ „ July, 1886	3,000
Seine at Ivry, Jan., ...	52,670
„ „ July, ...	14,130
Rhone above Lyons	75
Saône above Lyons	586
Saône below Lyons	4,280
Spree at Berlin Waterworks intake ...	750 to 17,000
Kent well water	7
Artesian well, Mainz	4
Lake Lucerne	8 to 51
Rain water at Montsouris	4·3
Chelsea Co.'s filter well, 1898	20
„ mains, 1895	139
„ „ 1898	85

It may be said, as Koch has laid down, that a filtered water should not contain more than 100 germs per c.c.; and certainly many filtered supplies do not contain nearly as many as this. The important point is to determine by a series of observations what may be considered to be the *natural* number (within certain limits), that are contained in any given supply, spring, well, river, reservoir, etc. (it being understood that no organisms indicating injurious contamination are included); and then to watch for any considerable increase which would point to alteration in the character of the water. It is particularly in regard to *filtered* supplies that this is of consequence, as defects in the filter works will certainly be brought to light if periodical numeration of bacteria be carried out. It is absolutely necessary that the cultivations should be made as soon as possible after collecting the water, in order that equally comparable results may be obtained; the writer makes a practice of sowing the

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water into agar within four hours of collection in cold weather, and within half-an-hour in hot weather.

In considering the value of this test, the following points should be borne in mind: *first*, there must be uniformity in the procedure; *secondly*, the season of the year, particularly as influencing temperature, must be allowed for; *thirdly*, it is relative rather than absolute indications that one must expect to find. The numbers mentioned below refer to agar cultivators at 37° c.

(1) *Uniformity of procedure.*—Every observer has his own favourite mode of working, and in time, with ordinary care and dexterity, his results ought to be strictly comparable amongst themselves; that is, his error of experiment ought to be fairly constant. But for the results of different observers to be correctly compared together, the procedure must be uniform: the length of time that elapses between collecting the samples and making the cultures, the temperature at which the growths are cultivated, and the time they are allowed to develop, are perhaps the chief things to be agreed upon. Under this head might also be considered uniformity in the preparation of media, especially in reference to the degree of alkalinity: this is of considerable importance, but as it is a matter relating to bacteriology in general, I do not now enter into details concerning it: every observer has his own *modus operandi*: we may either obtain a definite degree of alkalinity, as recommended by Mr. Pakes; or merely proceed to slight, but distinct, alkalinity, using phenol-phthalein as an indicator, as I have found convenient.

(2) *Temperature, and season of the year.*—This has a great influence on the number of organisms found; speaking generally, it may be said that in warm weather more will be present in any given sample than in cold weather: that is, a well or spring that in cold weather has but a very small number, in warm weather may have a much larger number, without any contamination having occurred; the *natural* bacterial population might be larger. This is, however, not always the case: thus P. F. Frankland found that the Thames at Hampton, and the Lea at Chingford, contained fewer organisms in the summer than in the winter, "this being due to the fact that during dry weather these rivers are mainly composed of spring water, whilst at other seasons they receive the washings of much cultivated land." It may be said that pure waters, even in hot weather, will contain only a few germs; while impure waters, though perhaps containing only a few germs in the cold, will in hot weather contain

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a large number: a small number of germs is therefore a better evidence of purity in hot weather than in cold.

Thus, in a well at Mandalay in the month of June, I found only 14 germs per c.c.; in two other wells at the same time and place there were 55 and 550 germs per c.c. respectively: the first was a *bonâ fide* deep well, efficiently protected from contamination; the second was a shallow well, protected; the third was a shallow well, unprotected. Again, at Poona in December, with a mean maximum temperature of 83° F., the water of Lake Kharakwásla contained only 3 organisms per c.c.; the same water conveyed along an open channel, then filtered and delivered through pipes, contained 54 per c.c.: the latter number is not excessive, but compares unfavourably with the high bacterial purity of the lake water. Deep well waters, if properly protected from contamination, do not vary much in their bacterial contents; their temperature is much less liable to variation than that of shallow wells or surface waters: the deep well at Mandalay just mentioned was remarkably pure bacterially even at the hottest time of the year: at Rangoon in March, with a mean maximum temperature of 92° F., I found an artesian well water contained only 2 organisms per c.c. In such a case the bacterial enumeration is of itself practically a sufficient proof that the water is pure, and the well properly protected: with such temperature conditions, if there had been any chance contamination, there would inevitably have been a larger number of germs.

(3) The *number* of organisms present is an indication of *relative* rather than *absolute* value. No hard and fast line can be drawn, nor can any one standard figure be given, of any use for general application. There is a rather prevalent idea that if a water contains less than 100 germs per c.c., it is of good quality; this is not by any means the case, neither is it the case that water containing 200 or 500 germs per c.c. is necessarily of bad quality. Where bacterial enumeration does really give valuable indications is under such circumstances as the following:—

(*a*) In regard to filtered supplies, it is evident that if the filter-beds are efficient there must be a great reduction in the number of germs; the experimental filters at Lawrence, Massachusetts, have succeeded in removing 99·57 per cent. of the bacteria in the applied water: this is perhaps rather a better result than can be looked for in all filter works. Those at Kirkee are on the most approved modern principles: I found the unfiltered water contained 108, and the water immediately after filtration 22 organisms per c.c.; this shows a removal of 79·6 per cent. The Bangalore filter works removed 79 per cent. of the applied organisms. These results are fairly satisfactory, though they

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might be better; the value of the bacterial examination would be shown by its immediately detecting any imperfections in these filtering apparatus; any considerable increase in the number of bacteria in the filtered supply, especially if the unfiltered water remained much the same, would give timely notice that the filters required attention. For this purpose frequent (weekly or fortnightly) periodical examinations should be made, both of unfiltered and of filtered water, of course, under precisely similar conditions.

(*b*) In comparing the relative purity of samples from a series of wells that apparently are, or should be, equally good sources of supply, quantitative estimation of bacteria may give a warning perhaps better than chemical examination; or, in the case of a *deep* well (which ought to furnish water with very few organisms) evidence of surface-water contamination may be given.

(*c*) Another case in which the mere numbering of the germs gives useful information is where simultaneous observations can be made of a water before and after its passage through pipes, open channels, or other means for distribution. Thus at Ahmednagar the source of the water is the drainage from barren hills away from cultivation and habitations, collected in an underground duct; a sample taken in this situation contained 14 germs per c.c. The water passes along some three miles of pervious duct, exposed to various chances of pollution on its way, and when tested at two points within the cantonment where it was delivered for use, contained, in three examinations, 160, 460, and over 1000 germs per c.c.; such contamination could of course be obviated by bringing in the originally pure water in a closed pipe. At Aden the drinking supply is condensed from sea-water; a sample taken immediately after condensation showed 7 organisms per c.c. This water is distributed throughout the station in iron carts, which on account of the climate are always warm; a sample taken direct from a cart showed 1000 germs per c.c. Evidently the cart was not kept properly cleansed, which, indeed, was impossible from its shape. At Umballa the supply is derived from shallow wells sunk in the bed of an old watercourse, and apparently free from danger of contamination; the bacterial contents were under 50 per c.c. The water is then led along a pervious duct for a distance of about six miles to the cantonment; during its passage it undoubtedly receives subsoil or surface-water through the walls of the duct. Various considerations pointed to this being the case, and it was proved by the fact that samples taken from the lower end of the duct contained from 360 to 1200 germs per c.c. It has been the well-nigh universal custom in India, until recent years, for the water to be distributed by leather *mussucks* or *pakhâls*; these

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receptacles are convenient and cheap, and have the sanction of a remote antiquity, but when once fouled they can never be disinfected or even thoroughly cleansed; they are now being abolished by degrees throughout the country. In one case I found 220 germs per c.c. in a spring water, and more than 1000 in the same water after being carried three miles in a *pakhál*.

(*d*) Storage in reservoirs should as a rule lead to diminution in the number of germs, owing to their sedimentation. It is well known that lake water (when not exposed to contamination) contains very few germs: thus, I found Kharakwásla lake, near Poona, a sheet of water 13 miles in length, contained only 3 germs per c.c.: the Red Hills reservoir, near Madras, contained 84; the Pashán tank, near Kirkee, contained 108; and the Bercha reservoir, near Mhow, contained 74; these last three being much smaller in size; the large Chamarajendra lake, near Bangalore, had as many as 400; the Jeddimutla tank, near Secunderabad, 135; the Victoria lake, near Rangoon, 197 germs per c.c.: these three reservoirs are certainly exposed to contamination from surface washings, but the same might be said of the others mentioned. When however a reservoir is placed near habitations and left uncovered, contamination by dust is certain to occur, with increase in the number of germs (and very probably the introduction of disease-germs as well). Thus, at Mhow, the water from the Bercha lake (where the number of organisms is small) is stored in an open service reservoir in close proximity to the Infantry barracks; the germs were found to number 258 per c.c., being increased more than threefold, instead of diminished as should be the case in a reservoir. The closed reservoir at Quetta, into which is conducted the very pure mountain-stream water, piped from Uruk, contained only two organisms on one occasion, and 13 on another.

(*e*) The effect of passage through pipes is not always the same. At Madras, the Red Hills water (which at the reservoir contained 84 per c.c.) after passing along an open channel for about seven miles, was found to have 600 per c.c. at Kilpauk: from this point it is piped into Fort St. George, and here it contained only 62 per c.c. The Seven Wells water, which when examined at the wells contained 400, when taken from a standpipe in the Fort contained only 40 per c.c. The *actual* figures are of course not of much consequence, but the *relative* reduction in numbers is undoubted. Yet in two other samples of Red Hills water, taken from two standpipes in Black Town, the numbers were found to be 600 and 460 respectively; the probabilities are that some insuction takes place in the distribution system in the latter case. At Kirkee the water after filtration con-

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tained 22, after passing through some two miles of piping, 36 germs per c.c.: this apparent increase is immaterial. At Quetta the pure water from Uruk (where only 1 organism per c.c. was found) was almost equally pure in the reservoir after passing through 13 miles of pipe. At Chakráta also the spring water, which contained from 1 to 9 germs, at the distribution tank was found to have only 1 germ per c.c. It is probable therefore, if a pipe supply is found to contain a much larger number of organisms than the original source, that some defect exists in the pipes.

(*f*) Spring water may contain either a large number of germs, or almost none. Undoubtedly true deep springs, yielding water that has filtered through a considerable depth of soil or rock, should have very few organisms. I have found such small numbers as 12 per c.c. (Jábal spring, near Dagshai), 4 (South springs at Jutogh), 8 and 12 (A and Lower A springs, Dunga Gali, near Murree), 6 in a spring near Loralai, 1 to 9 in the Deoban springs, near Chakráta. But a good deep spring may pass through a few inches of *humus* at its exit, and so wash away a large number of germs and appear to be impure: if such a spring were taken into use it is a matter of course that the surface soil, etc., would be removed and the water collected at its exit from the rock itself: the numerical test therefore is not to be relied on so much for springs unless one can make sure that the water comes *direct* from the rock, or some deep-seated source: a small number of germs will indicate absence of contamination, but a large number need not condemn a spring as unfit for use: the point can be settled by examination as to the *nature* of the organisms found.

III.—Qualitative Examination.

The number of different forms of bacteria present in water is enormous: it is extremely doubtful if the majority of these forms, which have been dignified with the names of species, are really specifically different. Many are "varieties" only, or "races," and on the other hand certain so-called "species," on more careful investigation, have been found to include under one name several really distinct forms. It would be impossible to attempt even to mention in this paper all the forms that have been met with and described as occurring in water. An endeavour will be made to explain the qualitative examination in so far as to determine, as nearly as may be, the indications of (1) surface pollution; (2) sewage or excremental pollution; and

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(3) the presence of *Bacillus typhi abdominalis*, and (4) *Spirillum cholerœ;* also (5) *B. enteritidis sporogenes.*

Moulds and *Yeasts* have little significance; they often gain access to old cultivations from the air; the colonies of the former are easily distinguished from those of bacteria. They are present in very large numbers in peaty soils (Houston), probably on account of the acid reaction; they would therefore be abundant in the washings from such soils. Yeast colonies are often like bacterial colonies in appearance; a moderately low power shows the individual organisms and their characteristic appearance.

(1) *Indications of Surface Contamination.*—There are certain forms of bacteria that are not commonly found in pure waters, or if found at all, only in very small numbers. On the other hand they are present in very large numbers in different kinds of surface soil. Of the bacteria that are commonly present in pure waters very few, as a rule, occur as spores; while of soil-micro-organisms about one-tenth to one-third are present as spores (Houston). *B. mycoides* (as bacilli and spores) and *Cladothrix* are almost peculiar to soil. *B. subtilis* (as bacilli and spores) and *B. mesentericus* (as bacilli and spores) are widely distributed in nature, and less characteristic of soil, but they are present therein in great numbers. *B. fluorescens liquefaciens* and *non-liquefaciens* have a still wider distribution and are therefore still less characteristic. "The discovery, then, in a water of a considerable number of colonies of *B. mycoides* and *Cladothrix*, and of the spores of *B. mycoides*, *B. subtilis*, and *B. mesentericus*, especially if the number of spores be disproportionately large in reference to the total number of bacteria, may be of importance as indicating pollution of the sample with surface soil water."—*Houston.*

B. mycoides is especially characteristic of garden and pasture soils, not common in those that are peaty and sandy. *Cladothrix* is common in all, except peaty soils; the fluorescent forms are common in all soils. In his later experiments (1899) Houston has found *streptococci* to be absent from virgin soils such as peat, and to be present in manured and polluted soils, in crude sewage, sewage effluents, and impure waters; he considers that their occurrence indicates excremental pollution, either direct or through the medium of polluted soil; and as

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they tend, outside the human body, to rapidly lose their vitality, their presence would indicate recent, and therefore especially objectionable, pollution.

It will therefore be a useful indication of surface pollution to determine (*a*) number of spores present; (*b*) presence of *B. mycoides, cladothrix, B. subtilis, B. mesentericus, B. fluorescens liquefaciens* and *non-liquefaciens*, and *streptococci.* To these may be added *Proteus vulgaris*, the chief organism of putrefaction, the presence of which will indicate corresponding fouling of the water.

Procedure.—For the commoner organisms, such as *B. mycoides, subtilis, mesentericus, fluorescens, Cladothrix and Proteus*, it is sufficient to prepare gelatine plate cultivations in Petri dishes, taking from 0·1 c.c. to 1 c.c. of the water, according to the probable number of germs present (0·5 c.c. as a rule), and examine the characters of the colonies that develop, either at room temperature, or better, incubated at 20° C.

To determine the *number of spores*, one c.c. water may be added to 10 c.c. gelatine in a test tube, heated to 80° C. for ten minutes (which will destroy vegetative forms), and then plated in a Petri dish. It is, however, better to filter a large quantity of water (as described below) and take a known proportion of the deposit, say one-tenth, add this to gelatine, heat to 80° C. for ten minutes, and plate out as before.

To detect *streptococci*, Houston's procedure is to liquefy 10 c.c. agar, pour it into a Petri dish, and when it has become quite solid to add 0·1 c.c. of the water, and so make a "surface-plate" culture. Some waters require to be concentrated by filtration, according to Klein's method (see below): an ordinary impure water may be added direct: a very foul water may need to be diluted: in any case about 0·1 c.c. is the bulk to be added to form the "surface-plate." This is incubated at 37° C., and any colonies examined with a low power: the colonies of streptococci are very minute: make subcultures into broth with a fine platinum needle and examine microscopically.

In my observations on Indian drinking-water supplies I have not systematically sought for these evidences of surface pollution, so clearly pointed out by Dr. Houston (having only become acquainted with his researches a few months ago): but such observations as I

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have made corroborate his conclusions. In no case have I found these organisms in an undoubtedly pure sample.

B. mycoides has been found five times: in four of these cases the supply was evidently exposed to washings from surface soil: in the fifth case it was from a shallow well exposed to pollution.

B. fluorescens liquefaciens does not appear to be so common in Indian as in English waters. I have only met with it on ten occasions: in four of these samples surface washings evidently had access to the water: in two other samples (Seven Wells water, and Fort St. George washing supply, Madras), this was not obvious, but the wells were certainly liable to pollution. In four other samples, examined at Aden, the occurrence of this organism was curious. Forts Morbat and Tarshain at that station are supplied with a reserve of water (in case of military necessities) that is stored in covered tanks: this water is the same condensed supply that is delivered to the rest of the garrison. The condensed water obviously cannot contain *B. fluorescens*, and I did not find it in any sample examined: but the water from both these Fort cisterns showed its presence in considerable quantity. The explanation is probably as follows: for washing purposes the troops in the Aden peninsula are provided with water brought in from the mainland by an aqueduct, and distributed in carts: *B. fluorescens* is present in this aqueduct water (which is derived from shallow wells): it is probable that some of this aqueduct water was surreptitiously introduced into the supply furnished to the Forts, in substitution for condensed water (which, for other reasons, was not unlikely). A sample of soda water made by a native manufacturer was also found to contain *B. fluorescens:* probably the cheap aqueduct water was used for washing the bottles, in place of the more costly condensed water. I have only once found *Streptococci* in a drinking-water supply; and only once *Cladothrix*. As it is rarely the case that Indian water supplies are what may be called pure in their origin, it is not to be wondered at that *B. subtilis* or *B. mesentericus vulgatus* are more often present than not: probably they gain access to the water in most cases through dust.

The forms described as *B. mycoides*, *ramosus*, and *radicosus*, Wurzel bacillus, are probably to be included in one species, or group: they are motile, spore-forming bacilli, liquefying gelatine, forming a pellicle on broth, curdling milk, not decolorised by Gram's method, not producing indol: their dimensions vary according to different authorities: their chief character is the mycelial-like growth in plate cultures. *B. subtilis* and *B. mesentericus vulgatus* are also motile, spore-forming bacilli, liquefying gelatine, forming a pellicle on broth,

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not decolorised by Gram's method, not producing indol: their dimensions also vary according to different authorities. It is probable that either they are not distinct species, or else, if typical forms are specifically distinct, that there are a number of intermediate races or varieties. The manner of growth in gelatine plates—a circular liquefying colony with an "aureole" or "corona" of bacilli projecting into the gelatine in a regularly radiating fashion, is characteristic of *B. subtilis;* a thick, wrinkled pellicle on potato is characteristic of *B. m. vulgatus:* the individual bacilli are longer and more slender in the former, shorter and thicker in the latter.

(2) *Indications of Sewage or Excremental Pollution.*—In ordinary sewage *Bacillus coli communis* is present in such enormous numbers (100,000 per c.c.) that it can be easily detected by appropriate methods, even if the sewage be diluted 1 in 500,000. As however it can exist and multiply as an ordinary saprophyte, it may be so widely diffused that its mere presence in water, unless in considerable numbers, "does not altogether justify the inference that such water has been directly polluted with sewage matters" (Klein); although it is sufficient to prove that the water is not a pure sample. The *Bacillus enteritidis sporogenes* (Klein) is another organism present in excremental matter (about 2,000 per c.c. in ordinary sewage) which, because it is anaërobic, rarely finds outside the body the conditions necessary for its development; it is therefore less widely distributed in nature, and is probably characteristic, when found, of fæcal contamination. The demonstration of *B. coli* in large numbers, or of *B. enteritidis sporogenes*, and particularly their *simultaneous* presence in a water, justifies a presumption that it has been polluted with sewage.

(3) *Examination for B. typhi and B. coli.*—Parietti's method is as follows:—A solution is prepared containing carbolic acid, 5 grammes, strong hydrochloric acid, 4 grammes, distilled water, 100 c.c. Into a series of test tubes, each containing 10 c.c. neutral broth, are introduced by a pipette 3, 6, 9 drops (30 drops = 1 c.c.) of this solution, and 0·5 c.c. of the water to be examined. After 24 hours' incubation at 37° C. any turbidity may indicate the presence of *B. typhi or B. coli.* Frankland states that 48 or 72 hours' incubation may be required when only a few typhoid bacilli are present. Klein does not

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consider the addition of hydrochloric acid to be necessary. Phenolated gelatine may be prepared in the same way, sown with water, and plated. The weak point of this method is the very small quantity of water tested: a negative result therefore cannot prove the absence of the organism sought for. Klein has devised a great improvement: from one to two litres, or more, are filtered through a Chamberland, Mallie, or Berkefeld filter: the deposit is taken off (with all precautions against contamination) by a sterilised nail-brush or fragment of sterile cotton-wool, and rubbed up in 10 c.c. sterile water (or the same water that is being examined): from this emulsion (which contains the particulate matter of the one, two or more litres) one c.c. is sown into each of three Parietti broth tubes, as just mentioned.

There are, however, several commonly occurring organisms which can grow in phenolated broth, besides *B. typhi* and *coli*: *B. lacticus*, *B. lactis aërogenes (Escherich)* and the pneumo-bacillus of Friedländer are nearly related; *streptococcus pyogenes*, *M. p. aureus*, *B. violaceus*, *ochraceus*, *fluorescens liquefaciens*, *subtilis*, *mesentericus vulgatus*, *m. ruber*, *pyocyaneus*, *anthracis*, *Cladothrix*, *Leptothrix*, and yeasts have all been found to grow in this medium: but they can be distinguished by their microscopic appearances, or cultivation characters in gelatine plates. Any colonies at all coliform must be submitted to further examination by appropriate special tests (see below).

The above-described method is not altogether satisfactory, as so many organisms, besides *B. typhi* and *B. coli*, are able to grow in the Parietti medium; and in the strongest proportion (9 drops of the solution in 10 c.c. broth = 0·15 per cent. carbolic acid) the growth of *B. typhi* (not *B. coli*) may very likely be prevented, even if it be present. Mr. W. C. C. Pakes, of Guy's Hospital, has recently *(Public Health*, March, 1900,) described a method, which the present writer has used largely during the past year and a half, and with satisfactory results. The principle of this is that very few water bacteria grow at 42° C., and still fewer under anaërobic conditions; while *B. typhi* and *B. coli* are able to grow freely when these combined conditions are present. The medium employed is glucose-formate broth, made by adding glucose 20 grammes, sodium formate 4 grammes, to one litre of ordinary nutrient broth before neutralisation and sterilisation. For anaërobic cultiva-

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tion Buchner's tubes are used: the solutions are (1) pyrogallic acid, 2 oz. dissolved in one litre of water, to which about one drachm strong nitric acid has been added: and (2) caustic soda solution, 40 per cent. Equal quantities (about 5 c.c.) of each solution are poured into the Buchner tube, and the glucose-formate broth tube (previously sown with the water sample) is *quickly* introduced, and the rubber stopper applied. This is incubated for 24, 36, or 48 hours at 42° C. Cultivations may be made with 1 c.c., and with 5 c.c. water; also with the concentrated water obtained by filtration of 2 or 3 litres, and working up the deposit in 10 c.c. sterile water, of which emulsion one-tenth may be taken. Growth will be shown by turbidity, either with or without the formation of gas bubbles (fermentation). Any tubes that show growth are then sub-cultured in gelatine plates, as usual (one loopful from the broth into a gelatine tube, two loops from this into a second tube, four loops from this into a third tube, all three being then plated in Petri dishes). The growths are often found to be pure cultures of *B. coli: B. typhi* and *B. enteritidis* (of Gärtner) are also found, as well as *B. lacticus* and a few others, that are easily differentiated by the appearances in gelatine.

The appropriate special tests must now be used to differentiate between *B. typhi* and *B. coli.* Any coliform colony that appears in the gelatine plates, that is, any non-liquefying, thin, whitish or greyish, filmy, irregular surface colony must be examined with lens, or a low power; fished out and sub-cultured in litmus agar, potato, milk, broth, and agar or gelatine shake: Elsner's test may also be used, and the agglutination or sedimentation test.

The method of examination for *B. typhi* and *coliform* bacteria employed by the writer is as follows:—

(1) Filter 2000–2500 c.c. through a Pasteur-Mallie filter; remove deposit with a piece of sterilised cotton-wool, which is inserted into a test tube containing 10 c.c. sterile water (taking all precautions to avoid contamination), and worked up in the water with a sterilised knitting-needle; the deposit is disseminated throughout the water, making it more or less turbid.

A. *Parietti test.*—(2) Sow one c.c. of this emulsion into each of two broth tubes, containing 0·1 and 0·2 c.c. respectively of Parietti's solution, and incubate at 37° C.

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(3) If turbidity occurs after twenty-four or thirty-six hours, make subcultures into two other Parietti broth tubes, increasing the quantity of phenol solution by 0·1 c.c., and incubate another twenty-four hours.

(4) If turbidity occurs again, prepare gelatine plate cultures (with two dilutions) from the tube containing most phenol.

(5) If any colonies at all *coliform* in appearance develop, make the following subcultures: (*a*) stroke on agar: (*b*) stroke on agar coloured blue with litmus: (*c*) stroke on potato: (*d*) inoculation into milk (previously sterilised for one hour on five successive days): (*e*) into ordinary broth: (*f*) shake culture in agar or gelatine. These are all (except gelatine) incubated at 37° C. Litmus may be added to milk instead of agar: two grammes litmus powder are well mixed with 25 c.c. water and filtered; of this 2 c.c. are added to each 10 c.c. of milk. Examine broth culture for indol (after three to five days): also microscopically (after twenty-four or thirty-six hours): stain with aniline gentian violet, and decolorise by Gram's method.

B. *Pakes test.*—(6) Sow one c.c. of the mixed deposit and water (emulsion), mentioned under (1), in glucose-formate broth, and incubate at 42° C. anaërobically.

(7) If any turbidity occurs, prepare gelatine plate cultures (with two dilutions).

(8) If any colonies at all coliform appear, proceed as in (5), making the sub-cultures (*a*) to (*f*) as there detailed; examine broth cultures microscopically and for indol.

If a sufficient quantity of water is not available for filtration, 0·5 c.c. may be sown into each of the Parietti broth tubes, and two glucose-formate tubes prepared with 1 and 5 c.c. respectively.

B. coli turns litmus agar, or milk red, coagulates milk, forms indol in the broth tube, and gas bubbles in the substance of the shake culture. *B. typhi* does none of these things. The growths on potato are rather variable. *B. coli* should give a yellowish growth, that of *B. typhi* being colourless and almost invisible. *B. coli* is a short rod, slightly motile, with 2 to 8 cilia; *B. typhi* is more slender, actively motile, with 8 to 14 cilia. Both are decolorised by Gram's method. The above characters are those of *typical* forms of *coli* and *typhi*; between typical growths of the one and the other very numerous intermediate "races" are found, partaking of the characters of each, and fully answering to neither.

The gelatine colonies of *B. lactis aërogenes* are coliform, but

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in stab cultures (gelatine or agar) gas bubbles are given off which crack the medium; the indol reaction is not produced and the bacilli are not motile. *Proteus Zenkeri* grows well in phenolated media, does not liquefy gelatine (or very slowly and slightly), and forms masses of threads, resembling mycelium of fungus, in gelatine plates and stroke or stab cultures. An organism, described by Klein as a "sewage variety of *P. Zenkeri*," grows in the same mycelial-like way in gelatine stroke; it is non-motile, does not curdle milk, form indol in broth, or gas bubbles in shake cultures. Klein (1896) regarded it as almost diagnostic of sewage-contamination. *B. acidi lactici* resembles *B. coli*, but has no cilia, and is non-motile; it is not properly decolorised by Gram's method; it coagulates milk, forms gas bubbles in shake cultures, and indol (slightly) in broth. Gärtner's *B. enteritidis* also resembles *B. coli*, but does not form indol.

B. coli and *Proteus vulgaris* can also be detected by the peptone-salt method—see below under (5).

For differentiation between *B. typhi* and *B. coli* the method of Elsner is as follows (it is a modification of Holz's potato-gelatine test):—Peel 500 grammes of potato and macerate in a litre of water for 3 or 4 hours; grate, squeeze through a fine sieve, and leave for about 24 hours; pour off the liquid and dissolve in it gelatine up to 15 or 20 per cent.; this mixture is acid; add normal soda solution (40 grammes caustic soda in 1 litre water) until the reaction is only very slightly, but still distinctly, acid; filter; sterilise by steaming for 15 minutes on three successive days; divide into flasks containing 100 c.c. each. When using the test, dissolve in a flask one gramme potass. iodid. with gentle warmth, sow in it the water as usual, and distribute in Petri's dishes. Very few species can grow in this medium. *B. typhi* and *B. coli* grow well; colonies of the latter after 24 hours at 20° C. have their usual aspect, and when slightly magnified are brownish and distinctly granular. *B. typhi* colonies after 48 hours are still small points, are colourless, transparent like drops of water, and much less granular than the preceding.

On account of the differences of composition (and especially of acidity) in different specimens of potato, L. Remy, of Liège, in order to obviate the uncertain results dependent on these

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differences, has proposed as a substitute a solution of asparagine with various acids and salts, in fixed proportions, combined with gelatine. In this medium *B. typhi* is said to be easily distinguishable from *B. coli*, retaining much of its ordinary appearances in gelatine plates (*Annales de l'Institut Pasteur.* August, 1900).

The sedimentation or agglutination test may be employed for the identification of a doubtful bacillus by means of serum from an undoubted case of enteric fever, the converse of the usual clinical procedure. Sheridan Délépine takes a 24-hour broth culture of the bacillus, with a platinum loop places 9 drops of this on a cover glass, and then rapidly mixes with them one loopful of blood: when the serum is potent, "clumping" of bacilli and cessation of movement takes place in from 5 to 30 minutes: when it is feeble, clumping may not occur for 2 hours. Widal advises that dilutions of 1 in 10 and 1 in 50 should be used: if agglutination does not occur with the latter, he regards the diagnosis as somewhat doubtful. Pakes (1900) makes 50 per cent., 5 per cent., and 0·5 per cent. dilutions of the serum in broth culture. A "time limit" of 15 minutes for a 1 in 10 dilution, and from 30 minutes to 2 hours for dilutions of 1 in 50 up to 1 in 1000 is recommended by Bates Block.

As to the significance of *B. coli* and its allies, pseudo-typhoid or coliform, the writer believes that they should be held to condemn a water absolutely (if present in any number), and agrees entirely with Dr. McWeeney's conclusion that "they occur regularly and abundantly in water to which attaches the suspicion of causing typhoid fever,—very seldom and in small numbers in water which is beyond the possibility of sewage contamination." As a matter of fact, in two epidemics at Paisley (1893) and Maidstone (1897), due almost certainly to the water supply, *B. coli* was found, but not *B. typhi*: this is not surprising in the light of Grimbert's experiment; on adding one c.c. of a culture of *B. typhi* and only 2 drops of a culture of *B. coli* to a litre of sterilised water, after three days nothing but *B. coli* could be found.

The following are the characters of typical *B. typhi* and typical *B. coli*. The accompanying table shows the characters of certain "coliform" bacteria, found in water by the writer during the past

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three years at various stations in India. At Dagshai, Umballa, and Rangoon, there were coincident prevalences of enteric fever: at Chakráta there had been an outbreak a few weeks previous to the examination of the water: at Wellington and Madras there neither was at the time, nor had there been lately, any such prevalence.

B. typhi (Eberth-Gaffky).—Cylindrical rods, with rounded ends, sometimes in pairs, 2 to 3 μ long by 0·7 to 0·9 μ broad (variable, thicker in solid, thinner in fluid cultures), generally very motile, having 8 to 14 cilia; facultative anaërobic, non-sporing; grows from 4° C. up to 46° C., optimum temperature between 25° and 35°. Decolorised by Gram's method. *Gelatine plates:* small, slow-growing, thin filmy colonies, slightly yellowish in the centre by transmitted light, quite transparent at the edges, which are irregular, and cut into little bays and promontories: the surface is uneven: no liquefaction. *Gelatine stab:* yellowish white colonies in the stab, thin surface growth, like the plate culture. *Agar:* white growth. *Litmus agar* or *milk* not reddened. *Potato:* after one or two days at 37° C. a colourless, almost invisible growth, which when examined microscopically is seen to be composed of the bacilli. *Milk:* grows well, but produces no clotting. *Broth:* rapid turbidity with deposit, no pellicle. *Shake-culture* in agar or gelatine, no gas bubbles formed. *Indol reaction:* to a broth culture, three to five days old, add a little strong nitric acid (which always contains some nitrous acid), pouring it gently down side of tube: no rose colour is produced, as no indol is formed by *B. typhi.*

B. coli (Escherich).—Rods resembling *B. typhi*, but generally only slightly motile, having 4 to 6, sometimes 8, cilia. *Gelatine plates* resemble *B. typhi*, but are thicker and quicker in growth. *Agar* and *broth* like *B. typhi*. *Litmus agar* or *milk* is reddened, the red colour afterwards disappearing. *Potato:* a thick, somewhat yellowish growth, sometimes brownish. *Milk* coagulated, with formation of gas bubbles. *Shake-cultures:* formation of gas bubbles. *Indol* reaction: a rose colour at junction of acid and broth, due to nitroso-indol.

Gärtner's *B. enteritidis* does not form indol, otherwise it resembles *B. coli* (according to Lehmann and Neumann, 1899: some observers state that it morphologically resembles *B. typhi*, and does not coagulate milk: H. Cushing, *Johns Hopkins Hospital Bulletin*, August, 1900).

"Sewage-variety of *Proteus Zenkeri*" (Klein, 1896).—The growths in gelatine plates and stab cultures resemble *B. coli:* white granules are seen in the gelatine colonies: in gelatine stroke culture a filamentous growth appears, like *P. Zenkeri.* Milk is not curdled: indol is not formed in broth: gas bubbles are not formed in shake-cultures.

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TABLE OF "COLIFORM" BACTERIA.

Source.	Isolation Test.	Growth on Potato.	Milk.	Indol.	Shake Culture in Agar.	Motility.	Microscopic Appearances.	
1. Dagshai. Dhobi Spring.	Parietti, B. 2.	Colourless.	Clotting.	Absent.	Gas Bubbles.	Active.	Bacilli 3 × 1.	Blue Agar reddened.
2. Do. Bazar Spring.	Parietti B. 1.	Colourless.	No Clotting.	Absent.	No Bubbles.	Slight.	Oval 1½ × 1. Some in pairs.	Blue Agar not reddened.
3. Umballa. Khera Well No. 4.	Parietti B. 2.	Colourless.	Clotting after 72, not after 48 hrs.	Absent.	No Bubbles.	Not Motile.	Bacilli 2 × 1. Mostly in pairs.	Coli-like in Elsner Gelatine.
4. Do. Lower Tank.	Parietti B. 2.	Colourless.	No Clotting.	Absent.	No Bubbles.	Not Motile.	Bacilli 2 × 1. Mostly in pairs.	Coli-like in Elsner Gelatine.
5. Do. No. 30 Tap.	Parietti B. 2.	.. .. ..	.. ..	Absent.	.. ..	.. .. ..	.. ..	Coli-like in Elsner Gelatine.
6. Chakrata. Deoban A Spring.	Pakes C.	Colourless.	Clotting.	Marked.	Gas Bubbles.	Not Motile.	Bacilli 2 × 1. Some in pairs.	
7. Do. Roadside Tank.	Pakes C.	Dirty Yellowish.	Partial Clotting.	Present.	Gas Bubbles.	Not Motile.	Bacilli 2 × 1.	Coli-like in Elsner Gelatine.
8. Do. Bazar Tank.	Pakes C.	Dirty Yellowish.	Partial Clotting.	Absent.	Gas Bubbles.	Not Motile.	Bacilli 2 × 1.	
9. Wellington. Main Barracks Supply.	Parietti B. 1.	Colourless.	Clotting.	Absent.	No Bubbles.	A few Motile.	Bacilli 2 × 1. Many in pairs.	
10. Do. Hut Barracks Supply.	Parietti B. 2.	Colourless.	Clotting after 48, not after 24 hrs.	Marked.	Gas Bubbles.	Not Motile.	Bacilli 2½ × 1. Many in pairs.	Also isolated by Pakes' D test; milk clotted in 24 hrs.; bacilli longer.
11. Do. Channel Supply.	Pakes C.	Colourless.	Clotting after 48, not after 24 hrs.	Absent.	No Bubbles.	Many Active.	Bacilli 2½ × 1. Many in pairs.	Gas formation in Glucose Formate Broth.
12. Madras. Seven Wells.	Parietti A. 1.	Colourless.	No Clotting.	Absent.	No Bubbles.	Active.	Bacilli 2½ × 1. Many in pairs.	
13. Rangoon. Well on Maidan.	Parietti A. 1.	Colourless.	No Clotting.	Marked.	Only 3 Bubbles.	Active.	Bacilli 3 × 1.	Pellicle on Broth.
14. Do. Town No. 1.	Pakes C.	Colourless.	No Clotting.	Absent.	Considerable Gas formation.	A few Active.	Bacilli 2½ × 1.	Slight Pellicle on Broth.
15. Do. Town No. 2.	Pakes C.	Colourless.	Clotting.	Present.	Considerable Gas formation.	A few Active.	Bacilli 3 × 1.	No Pellicle on Broth.
16. Do. Town No. 3.	Pakes C.	Colourless.	Clotting.	Marked.	Considerable Gas formation.	Some slightly Motile.	Bacilli 3 × 1.	No Pellicle on Broth.

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It is seen that at Dagshai (No. 2) a bacillus resembling *B. typhi* (except that the elements were shorter than usual) was isolated by the Parietti test from water concentrated by filtration. At Wellington (Nos. 9 and 11) a bacillus, like *B. typhi* in everything except that it clotted milk, was isolated in one case from concentrated water by Parietti's test, in another by Pakes' test from the water unconcentrated. At Madras (No. 12) typical *B. typhi* was found by Parietti's test in unconcentrated water; and at Rangoon (No. 14) a bacillus, like *B. typhi* in everything except that it formed gas bubbles in Agar shake culture, was detected in unconcentrated water by Pakes' test. In the other cases the organisms more resembled *B. coli*. Nos. 6, 7, 10, 15 and 16 answered to *B. coli* in everything except the growth on potato, which was almost characteristic of *B. typhi* (except in No. 7).

All these forms showed absolutely "Coliform" appearances in gelatine plate cultures (surface colonies non-liquefying, thin, more or less filmy, colourless, irregular, with indented margins); and all were obtained by passage either through phenolated broth at 37° C., or glucose-formate broth at 42° C., incubated anaërobically.

It is impossible to believe that all these forms are distinct species, and to the present writer it appears very unlikely that they should be permanent races or varieties: it seems much more reasonable to suppose that they are *temporary* variations only, capable of developing morphologically and culturally into *B. typhi* on the one hand or *B. coli* on the other, according to the conditions of environment; and capable also of either developing or losing pathogenic properties, that is, capable of intensification, or attenuation, of virulence.* The circumstances determining the degree of increase in virulence, so as to convert an apparently harmless microbe into one capable of causing a specific fever, may reside in the characters of the drinking-water; as, for instance, its temperature, the nature and amount of its contained organic matter, or the kind and numbers of the other bacteria present in it: these three factors are certainly not at all unlikely to bring about a change in the organism in question. Or, the determining circumstances may reside within the body of the consumer of the possibly pathogenic germ-containing water: that is, a person with healthy digestive secretions may suffer no ill-effect, while in another

* After prolonged incubation in *neutralised* peptone water, L. Remy has found (*Ann. de l'Institut Pasteur*, Nov., 1900), that *B. typhi* lost its agglutinating reaction with typhoid serum, and that *B. coli* ceased to form indol or ferment lactose: with similar incubation in *acid* peptone water these characteristics were preserved. Remy concludes that the difficulty in isolating *B. typhi* from water, in presence of *B. coli*, is not due to disappearance of the former, but to modification of its biological characters.

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person, in whom the products of intestinal digestion are retained too long, or the action itself abnormal, there may occur such an increase in numbers, or such an alteration in the bacterial products, that the result is—enteric fever; although typical *B. typhi* may not have been ingested. Sanarelli "thinks it probable that auto-intoxication with products of intestinal fermentation is a factor in the causation of typhoid fever," (the products of *B. coli* increasing the virulence of *B. typhi*—a view which gains much support from clinical experience in India); and Chantemesse and Widal "state without reservation that some factor besides the typhoid bacillus is concerned in the production of typhoid fever" (*Annales de l'Institut Pasteur*, 1892, 1894).

There is no one definite character by which *B. typhi* can always be distinguished from *B. coli*: that is, although the *combination* of characters mentioned above clearly distinguish typical forms of *B. typhi* from typical forms of *B. coli*, yet any one of these distinctions may fail (unless one is able to believe that eight cilia define a bacillus as *B. typhi*, and seven or less determine it to be *B. coli*.) The agglutination test, or serum reaction, has been considered to furnish a real specific distinction; but the observations of Lorrain Smith and Tennant ("A Study of an Epidemic of Typhoid Fever in Belfast, 1898," *B. M. Journal*, January 28th, 1899) have shown that some "races" of *B. coli*, obtained from water, give the reaction with as many as 50 per cent. of typhoid sera tested: other investigators have obtained similar results; this reaction cannot therefore be now held to give an absolute diagnosis between *B. typhi* and *B. coli*.

The practical point with regard to water analysis is, that the present state of our knowledge, even if it does not exactly demonstrate, at any rate with great probability indicates, that epidemics of enteric fever may be caused by (there is no doubt whatever that they may be connected with) presence of *B. coli*, or some of its "races," in the drinking water; and consequently that the occurrence of any members of this group of organisms should be considered as condemning the sample of water, just as much as if *B. typhi* itself were detected.

(4) *Examination for Bacillus enteritidis sporogenes.*—This is an anaërobic spore-bearing organism: having filtered 1 to 2 litres or more of the water, remove the deposit, as above mentioned, and work up in 10 c.c. sterile water: of this take one c.c. and sow into 15 c.c. sterilized milk: heat to 80° C. for ten minutes (to destroy all non-sporing organisms): incubate at

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37° C. for 24 hours anaërobically: Buchner's method is convenient (see above). In 24 or 36 hours the casein is coagulated, there is a copious development of gas, the whey remains colourless; the bacilli are found in the whey.

B. enteritidis sporogenes (Klein).—Motile bacilli, 1·6 to 4·8 μ long by 0·8 μ broad, sometimes forming short chains; spores readily formed; obligatory anaërobic. *Gelatine* with 2 per cent. glucose rapidly liquefied, with flocculent deposit. *Agar* with 2 per cent. glucose: circular flat moist grey colonies, copious formation of gas bubbles in depth. *Milk:* rapid and copious formation of gas, separation of casein flocculi, and formation of acid; the whey injected subcutaneously kills guinea-pigs in 18 to 30 hours (1 c.c. per 200–300 grammes weight). *Solidified blood serum:* copious growth, with liquefaction of the serum and offensive smell. Film specimens not decolorised by Gram's method (the bacillus of malignant œdema resembles *B. e. sporogenes*, but is decolorised by Gram); the bacillus of symptomatic charbon does stain by Gram, and does not liquefy blood serum; *B. butyricus* (Botkin) has no pathogenic action on guinea-pigs.

(5) *Examination for Spirillum choleræ.*—Klein recommends the peptone-salt method as the best. A solution is prepared of 10 parts peptone, 5 parts salt in 100 parts water, made faintly alkaline and sterilised. To each 90 c.c. of water to be examined add 10 c.c. of this solution, and incubate at 37° C. for 12 to 24 hours. It is well to take 200 c.c. and incubate in a large flask so as to expose a large surface to the air. After 12 hours the presence of the vibrio will be shown by turbidity: a droplet taken from the top layer and examined will show the commas. After 24 hours the turbidity is much greater: gelatine and agar cultures may now be made. *B. coli* and *Proteus vulgaris* also grow well in this salt solution, and can thus be readily detected. It should be remembered that *Proteus* often shows comma-shaped or spiral forms.

Sanarelli prepares a solution containing gelatine 20 grammes, dry peptone 10 grammes, sodium chloride 10 grammes, nitrate of potash 1 gramme in water 100 grammes: of this 10 c.c. are added to 200 c.c. of the water to be examined in a large flask, which is then incubated at 37° C.: after 12 hours a thin pellicle is formed on the surface, consisting of the vibrios: successive passages, at intervals of six hours, in the same medium will yield pure cultures: or gelatine or agar plates may be prepared. The cholera-red reaction can be obtained in about six hours.

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Durham-Gruber reaction.—Make an emulsion of 2 to 4 mgms. agar culture of the suspected bacillus in 0·5 c.c. bouillon: add 10 mgms. of the serum of an immunised animal to 0·5 c.c. bouillon: mix the two together: examine microscopically in hanging drop: in 10 to 15 minutes there is clumping and cessation of motility in the case of the cholera vibrio: in one hour deposit of the vibrios in flakes and clearing of the upper layers of fluid can be seen with the naked eye. The serum of a cholera patient has the same effect (Widal's reaction).

Spirillum choleræ Asiaticæ.—Curved bacteria, 1·5 to 3 μ long by 0·4 to 0·6 μ broad; the curved appearance is variable and sometimes but little marked; often joined into a semi-circle or S-shape. Motility active, especially at 30° to 35° C., but ceasing at 16° C. Cilia, one or two. Aërobic and very slightly anaërobic. No spore formation. Involution forms often seen. Decolorised by Gram's method. Optimum about 37° C. *Gelatine plates:* Minute granular colonies appear after 24 hours at 18° C., with wavy borders, and the appearance of leucocytes (van Ermengem); on second day, granular appearance is intensified; on third day, borders become dentated and begin to sink, and liquefaction of gelatine is seen; on fourth day, a central nucleus is seen, yellowish, with uneven margin, and surrounded by zone of liquefaction. *Stab culture in gelatine:* small depression after 24 hours at 20° C., with narrow growth in the track of the stab, slowly liquefying: on second day, appearance as of an air-bubble in the track; about sixth or seventh day the liquefaction reaches to the wall of the tube. *Agar:* thick whitish growth after some days. *Potato:* thin brownish layer, but only at about 37° C. *Bouillon:* rapid turbidity in less than 48 hours at 22° C.; in 3 to 5 days, a thin, dirty-white pellicle. *Milk:* abundant growth, but no apparent change (Koch); other observers state coagulation occurs. *Cholera-red* (Bujwid): to a pure cultivation is added hydrochloric acid (5 to 10 per cent.); after a few minutes a violet-rose colour appears, turning to brown on exposure; best marked with cultures at 37° C.; impure cultures do not show this appearance. *Indol* reaction marked, but the cholera-red reaction in entire absence of nitrites is characteristic.

Many forms, or varieties, have been isolated from undoubted cholera cases in different places, as the vibrio of Massowah (which does not form a pellicle on broth, and only gives the cholera-red reaction very feebly and slowly); vibrio of Rome (which neither forms a pellicle, nor grows at 37° C., in bouillon or agar, nor produces indol, nor is pathogenic to guinea-pigs; after 8 months it formed

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indol and grew at 37° C., but was still not pathogenic); vibrio of Lisbon (no indol and very feebly pathogenic), etc. Many varieties have also been found in water, both suspected and not suspected (vibrio of Ghinda, near Massowah, very pathogenic, feeble indol formation). D. D. Cunningham described ten different "varieties" or "species" of vibrio found in cholera cases in Calcutta. Sanarelli isolated 32 spirillar forms from water and sewer-water near Paris; he considers that pathogenic forms may become attenuated into mere saprophytes by residence in an unfavourable medium, and actually brought this about by keeping an extremely virulent vibrio in boiled Seine water for a month. Metschnikoff has also produced alteration in pathogenic properties and in form, and considers that the vibrio is itself variable, but that artificial variation acquired under the influence of external conditions may be constant. It is, however, only logical and prudent to suppose that forms which have become merely saprophytic through attenuating surroundings *may* again recover their pathogenic properties under favourable circumstances, whatever these may be. The case as regards the true *S. choleræ* and the allied "races" seems in fact to be much the same as that of *B. typhi* and the intermediate "races" between it and *B. coli*.

Spirillum Finkleri.—Curved bacteria, longer and thicker than *S. choleræ*, actively motile, spore formation doubtful, development of cultures more rapid than in *S. choleræ*, resists desiccation. *Gelatine plates:* liquefaction after 24 hours; the whole plate may be liquefied in 48 hours. *Stab culture:* liquefaction reaches bottom of tube in 48 hours at 20° to 25° C.; a liquefaction funnel or sac is formed, whilst *S. choleræ* still presents only a narrow streak; the whole tube liquefied in 3 days. *Agar:* white or yellowish layer. *Potato:* white, slimy layer with wavy border, at the ordinary temperature. *Indol reaction* slower and less marked than in *S. choleræ*.

S. sputigenum (Lewis) is of similar appearance, found in saliva, but has not yet been cultivated.

S. tyrogenum (Deneke) is of similar appearance; on gelatine plates, brownish circular colonies, with sharp borders; liquefaction more rapid than *S. choleræ*, less rapid than *S. Finkleri;* yellowish-white growth on agar; no growth on potato, even when incubated. No indol reaction. Found in old cheese.

S. Metschnikovi is the cause of an infectious disease of fowls, observed in Russia by Gamaleia (1888); it has the form and dimensions of *S. choleræ;* its gelatine stab culture is also similar, its potato culture likewise, but it grows at 25° C. or above; in broth turbidity occurs after 6 or 7 hours, with a pellicle the next day.

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A SKETCH OF THE HISTORY AND PATHOGENESIS OF SUGAR EXCRETION.

By FREDERICK S. PALMER, M.D., M.R.C.P.

It has been definitely ascertained that sugar in the form of dextrose, $C_6H_{12}O_6$, is a normal constituent of the blood of "Vertebrata," [1]varying in amount, both in man and in animals, from ·5 to 1 part per 1000. [2]Seegan, after an examination of the blood of ten healthy men, gave the average amount 0·17 per cent. [1]Bernard estimated the quantity in man to be ·9 parts per 1000; but according to Pavy, it does not exceed from ·04 to ·07 per cent. Many physicians and physiologists, among others, Brücke, Kühne, Bence-Jones, Broadbent, and Pavy, assert that a trace of sugar is found in normal urine[3] (0·096 parts per 1000, Pavy). The quantity is, however, so small that it gives no reaction with Fehling's solution, and may be altogether discarded for clinical purposes. Persistent glycosuria, accompanied by the cardinal symptoms of insatiable thirst, and augmented urinary secretion, constitutes the disease called diabetes mellitus. This term, however, cannot be applied to all forms of sugar excretion; for it is well understood that glycosuria may exist as a transient, intermittent, or alternating symptom in many different conditions of the economy, among which the following may be cited:—

1. After certain injuries and lesions, chiefly those relating to the skull, brain, spine, and abdominal organs.

2. It may precede, appear in the course of, or follow some organic or functional diseases, and mental disturbance.

3. During convalescence from the pyrexias, and other diseases, attended by marked nervous prostration.

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4. From the ingestion of large quantities of the carbohydrates.

5. As the result of the action of some toxic substances.

6. In pregnancy and during lactation.

[4]The earliest history recorded of our knowledge of this subject is, that "polyuria was mentioned in an Egyptian medical compilation before the time of Moses." Celsus described its symptoms in his *De Medicina* in the first century.

[4]Aretœus of Cappadocia (*circa* A.D. 150) and his contemporary Galen, are the earliest Greek writers to call attention to the polyuria and thirst.

[2]The name διαβήτμς is said to have been used first by Aretœus. [5]To our countryman, Thomas Willis Sidley, Professor in the University of Oxford, is due the credit of being the first European writer to observe and describe a saccharine condition of the urine in diabetes. In his *Pharmaceutica Rationalis*, published in 1679, he described the urine "as wonderfully sweet, as it were imbued with honey or sugar." [6]Sydenham, his contemporary, also wrote on the symptoms.

Little or no progress is reported in the study of glycosuria until a century later, when [6 7]Matthew Dobson and Pole, in 1774, demonstrated the presence of sugar in diabetic urine by a process of evaporation. [8]In 1778 (four years later) Cowley isolated the saccharine principle. John Rollo, Surgeon-General of Artillery in 1797, noticed the influence of an azotised diet in reducing the urine flow and sugar discharge in diabetes. His observations were of great practical value, and led to the direction of therapeutics into the proper course. Among predisposing causes he mentions [9]"a free use of fermented liquors, or a uniform participation of strong vegetable food of the farinaceous kind." [10]Cullen compared the urine to "a mixture of a small quantity of honey with a large quantity of water," and referred the disease to a defect in the function of assimilation, in 1784.

[9]Latham, in 1811, defined two varieties of diabetes, the saccharine and the serous. [8]In 1815, Chevreul learnt that the sugar excreted resembled that of the grape. [1]Gregory, in 1825, described the difference between *Diabetes mellitus* and *Diabetes insipidus*. [7]C. Schmidt and Thompson discovered sugar in the blood as a normal constituent, but "it was not definitely ascer-

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tained to be dextrose until 1875 by Abeles," in consequence of the great difficulty experienced in overcoming the disturbing influence of the albumens, in the reduction of the copper test. [8]Tiedmann and Gmelin observed, in 1825, "the transformation of starch into sugar during its transit along the alimentary canal." [11]McGregor of Glasgow, in 1837, detected sugar in blood, saliva, urine, vomited matters, and stools of diabetics, but he was unable to trace it in the sweat. To this time, and for eleven years afterwards, although much useful information had been acquired of the ætiology of glycosuria, its pathogeny remained in profound obscurity. The various theories advanced from time to time rested on no scientific basis or anatomical support. [7]Bouchardat believed the carbo-hydrates of the ingesta were transformed by the action of some ferment. Maille maintained, the normal consumption of sugar in the economy was retarded by a diminution in the alkalinity of the blood. In 1848, a new era dawned on the investigation of this interesting subject called [8]"The Physiological Epoch." The distinguished Professor of the College of France, Claude Bernard, to whose careful and elaborate researches we are indebted for the most correct views we possess of its pathology, raised the discussion to a scientific level.

Bernard declared the liver alone is the organ responsible for the production of sugar, and he arrived at this conclusion from the following facts. In all the animals he experimented on he found the liver impregnated with saccharine material. He discovered a much larger amount of sugar in the hepatic veins than in those of the portal system. In the liver he found a substance closely allied to starch, from which material, by the aid of a ferment also present, he believed the liver prepared it. To this substance he gave the name of glycogen. His doctrine of the hepatic source of sugar was confirmed by a subsequent experiment,—the post mortem production of sugar in a liver removed from the body after careful washing. His great discovery of the artificial production of glycosuria by the famous diabetic puncture of the floor of the fourth ventricle, between the nuclei of the auditory nerves and the par-vagum revealed the connection between traumatism of this region and saccharine urine, or in other words, [12]demonstrated the nerve-centre regulating its formation. Bernard's researches were published

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in three classical treatises in 1848, 1850, and 1854; his "Leçons sur le Diabéte" in 1877. Since then, the artificial production of sugar excretion has followed many other experimental lesions of the nervous system. [10] The German physiologist, Schiff, confirmed to a great extent the doctrines of Bernard, but he found that simple irritation of the ventricle was insufficient to produce glycosuria without the intervention of the liver. He considered the sugar discharge was due to the action of the vasomotory nerves transmitted along the anterior columns of the medulla, producing a paralytic hyperæmia of the organ from dilatation of the vessels. His later views are well expressed in his own words:—

[13] "Le diabéte par suite de l'hypérémie pourrait donc bien ne pas être l'effet spécifique d'une hypérémie du foie, mais de chaque hypérémie générale d'une certaine étendue." In 1860 the statements of Bernard, which had been generally accepted for many years, were assailed by Dr. Pavy[14], who from numerous experiments on animals found sugar in all parts of the vascular system, and in the liver *post mortem* (in the latter increasing in quantity, within certain limits, the later the examination was deferred). He discovered no difference between the amount contained in the hepatic veins and those of the other vessels. In his opinion, the excess of sugar in diabetic blood comes from the liver, produced by the action of a blood-ferment on hepatic glycogen. [15] [16] He believes the liver and intestinal villi "are inadequate to accomplish their function of synthesizing the carbohydrates," from nerve influence, causing vasomotor paralysis, which allows imperfectly de-arterialised blood to reach the liver by the portal vein.

[8] "One of the main points I have brought forward in these lectures is, that the effect of blood unduly charged with oxygen reaching the liver by the portal vein is to occasion glycosuria. I certainly incline to the opinion that some kind of textural change in the brain stands at the foundation of diabetes, and that there are two ways in which the effect may be produced." He proceeds to explain either by the vasomotor or cerebro-spinal systems. Since Pavy's work, "Researches on the Nature and Treatment of Diabetes," was published, glycogen or animal starch, $C_6H_{10}O_5$, which he called amyloid substance, has been discovered elsewhere than in the liver; for instance, in the

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leucocytes, in the muscles, and in all embryonic tissues.[13] His views have therefore been modified to include all glycogen-bearing structures as possible sources of sugar.

Seegan of Vienna, in 1875, after repeating the experiments of Bernard and Pavy, [13] discovered the amount of sugar contained in the hepatic veins exceeded that of the portal system by more than sixty per cent. ([17] This statement has recently been considerably modified by Mosso.) He denies the existence of a ferment which he failed to isolate. The result of Seegan's conclusions is, that sugar formation is a normal function of the liver cells, prepared from albumen and fat. [18] The communication made to the French Academy of Medicine by Lancereaux, in 1877, relating to the connection between morbid changes in the pancreas and diabetes, has thrown some additional light on the subject. The importance of these lesions, however, has been recognised since Thomas Cowley in 1788, recorded, in the *London Medical Journal*, "a case of diabetes in which the pancreas was atrophied and contained calculi."

[7] Senator of Berlin defines three forms of diabetes according to their supposed origin, viz.: the neurogenic, the gastro-enterogenic, and the hepatogenic. [19] Ebstein, of Göttingen, maintains that the true explanation of sugar excretion in diabetes rests with the failure of the protoplasm in the cells to produce a sufficient amount of carbonic dioxide, by which its inhibitory action on diastatic ferments is lessened. He attributes this to abnormal nerve influence. [20] In 1886 v. Merring produced glycosuria by the administration of phloridzin, a glucoside obtained from the apple, pear, plum and cherry tree, [21] discovered in 1885 by Von Kornish. Diabetes occasioned by this substance is analogous to the most severe type in man, and is probably due to protoplasmic metabolism.

[20] Experimental lesions of the pancreas conducted by Minkouski and v. Merring, in 1889, and de Dominicio about the same time, proved that extirpation of the gland is followed by glycosuria. [20] Partial excision of the pancreas did not produce glycosuria even when the duct was ligatured, and its connection with the duodenum cut off. The remarkable experiment of Minkouski's "of transplanting a portion of the pancreas (after complete extirpation) and grafting it under the skin of the abdominal wall external to the abdominal cavity," proved that if the

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nutrition of the graft were maintained, and its vitality preserved, glycosuria did not occur; but on removal of the graft severe diabetes followed. [20] These results have been confirmed by Hédon, Thiroloix, Gley, and Lancereaux. [12] It was found after excision of the pancreas that there was a large increase of sugar in the blood, glycogen disappeared from the organs, and acetone noticed in the urine. Merring and Minkowski consider the pancreatic secretion, trypsin, to be the ferment which converts maltose from the carbohydrates into glucose. [12] Lépine confirmed the statements of the German physiologists and obtained similar results by excision of the pancreas antiseptically without injury to the solar plexus. [22] Kaufman, from his experiments on animals, considers the pancreatic secretion has an inhibitory action on the liver, by its influence on hepatic metabolism, and the central nervous mechanism. The cœliac plexus has been extirpated by several observers, but the results appear to have varied. [23] Von Noorden believes the excess of carbohydrates not consumed in the tissues, or stored up in the body as glycogen or fat, appears in the urine. If we turn from the field of experimental physiology to pathological anatomy, to search for the *fons et origo* of sugar excretion, the record is in the highest degree disappointing. There is no particular organ, or tissue, in which constant marked changes have been discovered, having a specific relation to diabetes. [24] In recent cases the post mortem appearances are frequently normal. In others, the lesions found are due to complications, or refer to trophic changes in the central nervous system, liver, spleen, kidneys, and other structures. [25] Williamson examined the pancreas in 23 consecutive cases of diabetes, and found pathological changes, chiefly atrophy, in 11. [25] Other observers discovered morbid conditions of the gland in 50 per cent. of the cases, atrophy, fatty and cystic degeneration, abscess, and cancer. [26] The most constant change noticed is that described by Ehrlich, of the glycogenic degeneration of Henle's loops in the kidneys. [4] The microscope has not revealed any alteration in the liver cells associated with diabetes; and no microbic evidence has been furnished by bacteriologists. [26] The only reliable means of arriving at a correct conclusion, is by a chemical examination of the sugar proportion contained in the blood and urine.

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In the preceding lines I have endeavoured, very imperfectly, to trace the principal facts recorded in the evolution of our knowledge of the history of glycosuria. The pathogenesis is probably one of the most perplexing and interesting problems which scientists have yet to solve. The literature is so voluminous, and the various theories adduced so numerous and conflicting, that it would be quite impossible within the limits of this article to mention more than a few of them. I have, therefore, confined my notes to a recapitulation of the leading facts, derived from experimental and pathological research.

Notwithstanding the great attention which has been given to the subject by so many eminent physicians and physiologists, the whole question is still in a very unsettled state. No explanation yet suggested can be regarded as a satisfactory one. Bernard's discoveries in the middle of this century laid the foundations of our present position. His doctrines have stood the test of much criticism, but in their main points his statements remain practically unshaken. That in the majority of cases of diabetes, if not in all, the sugar discharge is an expression of the excess of the normal amount of sugar contained in the blood (glycæmia) which filters away through the kidneys, seems to be almost indisputable. The riddle which requires an answer is: What is the constitutional anomaly which occasions the excess? In addition to the theories of Bernard and Pavy, [27] recent physiological researches have rendered it probable that sugar formation is a function of the liver cells, under the control of certain undetermined excito-secretory nerves, which, according to Morat and Dufour, are distinct from the vasomotor nerves. [28] The opinion appears to be gradually gaining ground that diabetes is not a pathological entity, but rather a group of symptoms which may be produced by various morbid changes in the system, not, in fact, always the proximate result of the same primary departure, but having its origin in several abnormal processes. The frequent association of glycosuria with the gouty diathesis mentioned first by Rayer and Bernard, which is now a matter of common clinical experience, certainly favours this assumption. In the same way that albuminuria in connection with cardiac lesions, the high pyrexial states, after errors of diet, exercise, or disturbed innervation, does not imply the existence of Bright's disease, so accidental or

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symptomatic glycosuria in other morbid conditions does not constitute the disease recognised as *diabetes mellitus.*

Until we are in possession of more precise information concerning the functions of the pancreas, and the part which sugar plays in the animal economy, the pathogenesis of saccharine urine seems likely to remain in obscurity. "Veritas visâ et morâ, falsa festinatione et incertis valescunt" (*Tacitus*).

[1] Lexicon of Medicine and the allied Sciences, New Sydenham Society.
[2] Diabetes Mellitus, Williamson, p. 190.
[3] Croonian Lectures, Pavy, 1878.
[4] System of Medicine, Allbutt, Dr. Saundby, p. 195.
[5] Diabetes Mellitus, Williamson, p. 2.
[6] Lectures on Renal and Urinary Diseases, Saundby, p. 219.
[7] Diabetes Mellitus, Hofmeister, New Sydenham Society, 1894.
[8] Tanner's Practice of Medicine, Vol. 1., Sir W. Broadbent, p. 26.
[9] Diabetes Mellitus, Williamson, p. 4.
[10] Trousseau's Clinical Medicine, Vol. III., Lecture LXIV.
[11] Watson Lectures on Physic, Vol. II., p. 604.
[12] Diabetes Mellitus, Hofmeister, p. 155 to 159.
[13] Journal de l'Anatomie et de la Physiologie, Paris, 1866.
[14] Researches on the Nature and Treatment of Diabetes, Pavy.
[15] Croonian Lectures, Pavy, 1899.
[16] Physiology of the Carbohydrates, Pavy, 1894.
[17] Diabetes Mellitus, Williamson, pp. 58, 59, 140.
[18] System of Medicine, Allbutt, Dr. Saundby, p. 202.
[19] Practice of Medicine, Frederick Taylor, p. 790.
[20] Diabetes Mellitus, Williamson, pp. 70, 73, 74, 75, 76.
[21] Lectures on Renal and Urinary Diseases, Saundby, p. 229.
[22] Diabetes Mellitus, Williamson, p. 68.
[23] Lectures on Renal and Urinary Diseases, Saundby, p. 232.
[24] Practice of Medicine, Frederick Taylor, p. 788.
[25] Principles and Practice of Medicine, Osler, p. 422.
[26] Diabetes Mellitus, Hofmeister, p. 162.
[27] System of Medicine, Allbutt, Dr. Saundby, p. 205.
[28] Diabetes Mellitus, Williamson, p. 300.

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CARE, TREATMENT, AND TRAINING OF IMBECILE CHILDREN.

By C. M. JENKINS,
Chaplain of Darenth Asylum.
AND
F. R. P. TAYLOR, M.D., B.S.Lond.
Medical Superintendent, Darenth Asylum.

It has been recognised during the last ten years that the number of imbecile children in the community,—apparent products of the complex civilization of the nineteenth century,—has largely increased, and the problem how best to care for and train these children has forced itself upon the attention of those interested in their welfare.

Specialists recognise, from an educational standpoint, among imbeciles two great classes: 1st, those who are capable of benefiting by instruction; and 2nd, those of a lower grade, where the intelligence is so little developed that no permanent and practical result can be hoped for from training and education. The remarks contained in this paper are confined to the former class, those possessing such a degree of mental power as to derive benefit from instruction and training.

It is generally admitted that no hard-and-fast line of demarcation can be drawn between the orders of intelligence presented in the "feeble-minded" and "imbecile," and it is therefore important that any child whose mental powers may be the subject of doubt, shall be placed in an environment favourable to both physical and mental development, and under the supervision of a medical expert, competent to advise as to the future treatment of the patient.

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In the majority of cases, in order to obtain such a favourable environment, it is necessary to remove the child from its home and away from parental control. The home surroundings of imbecile children are often detrimental to their physical and mental development, and here the first difficulty in the treatment arises. Parents as a rule, are reluctant to admit any mental defect in their children and refuse to sanction their removal to an institution where they can be properly trained, until vicious and troublesome habits have been acquired, which, in many instances, are ineradicable.

The need of withdrawal of these children from their unsatisfactory home surroundings having been recognised, the first point presented for consideration is, what is the best substitute for them? Existing accommodation for imbeciles falls into three classes: (1), private homes, under the control chiefly of medical men, where only a small number of cases can be received, and those of the better class; (2), private asylums, where admission depends on election and payment; (3), rate-supported institutions, *e.g.*, "The Darenth Asylums," and special wards attached to county asylums.

All the above classes of institutions are open to objections. With reference to the first two, these objections are mainly economic. The fees required for entrance close them against the children of the poor, and in them suitable accommodation for classification cannot always be provided; and further, no provision for continuity of supervision is made when the patients reach adult age.

With regard to rate-supported institutions, these at present make no provision for the care and treatment of imbecile patients when adult age is reached apart from the chronically insane, and the term "asylum" is often the objection raised by the parents to sending their children to these institutions. Further, the whole method of the administration of a county asylum is ill-adapted for an institution where it is proposed to train and educate imbeciles, even though it be to a limited degree, and it should be noted that the total accommodation provided is quite inadequate to the demand made upon it.

The primary object to be kept in view in the care of imbecile children is the promotion of physical development, upon which rests the hope of mental improvement, therefore

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the institution where it is proposed to carry out this work should be situated on a healthy site, with a sufficient amount of land attached to allow for extension, and for the employment of the patients in suitable avocations when the adult stage of life is reached. It should be at a convenient distance from the chief centres of population, from which its inmates would be drawn, and should afford easy access to a railway station.

Although it is a well recognised fact that a large institution can be worked at a cheaper rate than a small one, nevertheless, in the interests of the patients, an institution of the sort contemplated should not contain more than 500, otherwise the individuality of the patient is in danger of being lost, and personal care and supervision cannot be adequately bestowed upon the inmates.

Such an institution should comprise a group of central buildings, containing the administrative offices, day and night accommodation for about 200 inmates, and also the necessary provision for the staff. For economic reasons, and also to ensure the proper cooking and serving of the food, this central block of buildings should contain a large dining-hall (with kitchen adjoining), where all patients should take their mid-day meal.

Attached to this central block should be the school, with a suitable number of class-rooms, and in this school the first efforts to stimulate and train the faculties of the child would be made. Entrance to the institution should be gained through the certificate of an outside medical man, certifying the case as one likely to derive benefit from a course of systematic training.

Located around the central block should be detached cottage-homes, each accommodating about thirty patients who have passed through the preliminary stages of training. Some of these homes should be set apart for girls and some for boys, and should be the substitutes for the former homes of the patients.

Each "home" should be made as comfortable and homelike as possible. Near the central block there should be a group of workshops where handicrafts suitable to the capacities of those we have benefited by the preliminary training should be taught. Among 500 imbeciles, about a third would be epileptics, and for these ground-story buildings should be erected, or the

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stairs rendered as safe as possible. The Toledo Asylum in the State of Ohio has been erected on this plan. The cost per head for erection was about £60. The administration should be under the control of a medical expert, since successful treatment of imbeciles rests largely upon physiological grounds, and the physical well-being of the child is of the first importance. A sufficient staff of nurses trained for this special form of work should also be provided. Great care is required in the selection of teachers for the actual training and instruction of the children in the school. The experience gained in teaching normal children helps but little with imbeciles. The imbecile child manifests but a low capacity for response to the teacher's efforts. Results gained are often quite incommensurate with the amount of time, patience and perseverance bestowed on the child. Months of work are required before marked signs of improvement are shown, and this tends to dishearten teachers accustomed to normal children. Teachers for imbeciles require in a far higher degree than those engaged in ordinary school work, patience, gentleness, tact, ability to study character, ingenuity and resourcefulness. These are absolutely required for gaining any form of success. Teaching capacity more than certificates should be regarded in the selection of the teacher. Experience has shown that women are better adapted than men for imparting the preliminary instruction to these children, whose arrested mental development makes them actually of the infant type when the years of infancy have been passed.

The domestic work of the institution should be controlled by a matron and household staff, and the responsibility and care for this work should not be allowed to hinder in any way the efficiency of the teaching staff, the head of which should be free to devote the whole of her time to the work of instruction.

The method of general treatment of the child while in the school should be directed to the improvement in the first place of its physique. A large number of imbeciles on admission to the institution will be found to be suffering from malnutrition, which may or may not be associated with some form of bodily disease. Bodily deformities and paralysis more or less extensive are common. Malnutrition is often caused by the former defective environment of the child and the apathy or neglect of the parents, and in many instances, owing to the economic con-

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ditions of their lives in large cities, the parents are unable to bestow adequate time and attention upon their children, especially if some physical defect in the child requires extra care. Fresh air, suitable food, and regular habits, will effect in a few months a great improvement in the physique of these children. Massage has proved beneficial for those suffering from different forms of paralysis, and physical exercises promote co-ordination in limb movements.

Congenital-syphilis is occasionally manifested among these children, and consequently requires specific treatment. Visual defects also existed among a large number of the admissions into the Darenth Asylums in 1899. Thirty per cent. were found to be affected in this way, and of these eighteen per cent. had choroido-retinal changes. Ophthalmoscopic examination should be made of all admissions, and the errors discovered should be corrected if possible before any other form of training is attempted.

The correction of bad habits which the child may manifest, such as destructive tendencies and wet and dirty propensities, should be undertaken as soon as possible. Long and patient efforts are needed ere any improvement is shown, but the eradication of these habits when effected is a great economic gain, and largely diminishes wear and tear. Those who have had charge of patients with destructive habits realize the cost of their maintenance.

The general principle which should regulate the system of instruction and training is that as far as possible it should be made concrete. Abstractions are very difficult for the normal child, and in the case of the imbecile far more so. The appeal to these children's dormant intelligence must be made through the hand and the eye and the ear. The simplest forms of kinder-garten work are the most effective in attaining this end. They promote muscular co-ordination, and by calling into action the different brain centres which interact on each other, stimulate and strengthen them. Children of the imbecile type suffer very easily from brain fatigue. Their powers of concentration are very small. Interest in anything is easily diverted, and so the time spent in the school each day should not be long. Two to four hours will be found enough for the different classes.

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The object of this method of instruction should be kept in view, which is to gradually promote the progress of the child in manual efficiency, leading up to the simpler forms of handicrafts. The end to be gained is to render the child partially self-supporting. Tailoring, shoemaking, basket-weaving, brush-making, netting, carpentering, sewing, gardening, and laundry-work lend themselves to this end, but all carried on under the continuous supervision of a master workman. The idea that the imbecile will become entirely self-supporting and able to hold his own in the struggle for existence, is fallacious.

The brightening of the general life of the child should also be kept in view. Those who manifest the ability should be taught to read and write, and perform the simplest arithmetical work. This will necessarily be of a very elementary character, and progress therein must be limited.

A serious difficulty in carrying on the work of the training and care of imbeciles must be foreseen. As soon as the child manifests signs of improvement the parents generally desire to withdraw it, so that its help may be obtained to support the home. It almost invariably happens that on withdrawal from the systematic and regular mode of life of the institution, deterioration rapidly sets in, and if adult age is reached, vicious habits are formed, whilst frequently the younger cases return to an asylum. In the case of girls they often fall victims to seduction. Sexual instincts in the imbecile are less under control than in the normal class. Will power is less, and bearing in mind the large share which heredity holds in the causation of imbecility, it is to be very seriously considered whether in the interests of the community imbeciles should be allowed to be withdrawn from the institution.

Though it is a serious matter to interfere with the liberty of the subject, yet the object of such a scheme of training imbecile children, as above sketched, would be defeated if parents were allowed to withdraw their children at will, or if the child when it reached adult life were discharged from the institution. It would be wise to enforce the system that all discharges should be effected by the ruling authorities of the institution acting on the advice of the medical expert.

The cottage homes mentioned in the earlier part of the paper should become the permanent abodes of those who,

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having passed through the school, are in the workshops. As much liberty as is consistent with safety should be given to the inmates. Imbeciles become excessively attached to their surroundings and manifest no desire to leave an institution wherein they have grown up. Their lives can be made quite happy in such homes, and as a colony they will prosper, contributing largely to their self-support.

The question will probably be asked by many: Are the results to be obtained from this system of training the imbecile child of such a character as to justify the expenditure both of money and of time which will be incurred in carrying it out? When approaching the consideration of results it is necessary to clearly see that as the material is abnormal in comparison with that which passes through the hands of an ordinary teacher in our elementary schools, so the results obtained by specially qualified teachers, using special methods of training, must necessarily present special features of their own. Normal results can never be obtained in training abnormal children. Yet the training of these children is of value to the community at large. In the first place the benefit which accrues to the parents must be noticed. In the majority of cases the parents of these children are engaged in occupations which often necessitate their absence from home for the greater part of the day and on which their livelihood depends. The relief obtained by these when a home can be found for their imbecile child, must be very great; it enables both parents to freely devote all their energies to their work, and rids them of what must necessarily be a constant source of worry and anxiety; and even if the mother has only her domestic work to perform, this can be much better done when she has no longer to devote a great part of her time to the care of her imbecile child. With the best intentions, too, she cannot give that skill and attention which the child would receive in an institution.

Secondly, the benefit which accrues to the child from such a system of training is immense. Without training it is almost certain that the higher-grade imbecile will develop vicious and criminal habits which sooner or later will render him dangerous to society and bring him into the clutches of the law, whilst those of lower grades of intelligence will lead a mere animal

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life. By such a system of training as is here sketched, the child will be taught, if only to a limited degree, those altruistic sentiments which so largely influence the happiness of each individual's life. His work will become a source of pleasure to him, and he will feel that he is doing his share in the battle of life, and thus the aimlessness of the life of the untrained imbecile would be removed. His personal safety and comfort would be assured during the whole of his life, and at the same time all this would be carried out in as economic a method as possible.

Lastly, there is the benefit which results to the community at large. It is axiomatic to all those who have had experience among imbeciles, that the untrained child is more expensive to the community than the trained. Whatever will relieve the incidence of the taxation which now presses so heavily upon our towns is well worthy of trial, especially when this embraces in addition philanthropic ideas in reference to a more or less neglected portion of our population. The eradication of destructive habits and the inculcation of those of personal cleanliness and decency all materially tend to lighten the burden of the taxpayer.

There is no doubt that with proper training the labour of many imbeciles can be made valuable, and the cost to the taxpayer of maintaining an institution such as is here proposed should after a few years be very small.

There is the further point that if segregation could be more or less voluntarily carried out by rendering the Home and colony attractive, and if similar homes could be established throughout the country, there would undoubtedly be a much smaller number of imbeciles to be provided for in the years to come than at present.

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THE SURGICAL TREATMENT OF APPENDICITIS, EXEMPLIFIED BY A RETROSPECT OF FIFTY CONSECUTIVE OPERATIONS.

By JAMES SWAIN, M.S., M.D.Lond., F.R.C.S.Eng.,
Professor of Surgery at University College, Bristol;
Assistant-Surgeon to the Bristol Royal Infirmary.

Statistics of appendicitis—arranged according to the particular bias of the individual—have been published *ad nauseam.* They prove little, and influence our line of conduct still less; and in spite of them all the perennial question of when to operate in appendicitis continues to excite a keen interest. The declamation of hard and fast rules by different surgeons fails to carry conviction: there is no golden key to the appendicular lock. So long as the constitution of men differs, so long will it be impossible for most of us to do otherwise than judge every case of appendicitis on its merits. To make any single method applicable to all cases would seem a self-evident folly, and yet we have one class of surgeons recommending the removal of every appendix in which the symptoms of inflammation are not abating at the end of thirty-six or forty-eight hours; while another class is in the habit of delaying operation until a late stage of the disease, when surgery offers the only (and a very poor) chance. The first is an error of commission, and the second an error of omission. Perhaps, in the sequel, we shall see that between these extremes there is ample room for a middle course, and thus provide another exemplification of the old adage *in medio tutissimus ibis.*

The educational code provided by the school of experience is sufficiently sound to make it worth while to pause from time to

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time to contemplate our work, and test the trustworthiness of our methods. This I propose to do in this retrospect, for I consider that a consecutive series of cases is the only means by which our results can be fully appreciated.

The tabular list of cases (arranged simply in the order of their occurrence) is given for reference, and from these operations I shall endeavour to illustrate such conclusions as I have formed on this subject. I can only speak as an operating surgeon, for many of the cases were only seen at the time of operation: of the comparatively mild cases that do not require surgical interference I do not propose to treat, nor shall I touch upon questions of etiology or pathology, which do not come within the scope of this paper.

A.—The Question of Operation.

1. *In Perforative or Fulminating Appendicitis.*—This class figures largely in a list of operations, though it really forms only a small proportion of all cases of appendicitis. All surgeons are agreed that operation in these cases offers practically the only chance of life, and it is the dread of perforation that has led most of the American surgeons to adopt the rule that appendicectomy should be performed in all cases that are not distinctly improving in thirty-six or forty-eight hours. They affirm that in the early stage of the disease it is impossible to say whether perforation will occur or not; that if it does occur it is very fatal; that, inasmuch as perforation nearly always occurs after thirty-six or forty-eight hours, the appendix should be removed before this period has elapsed; and that under these circumstances the mortality is very small. Against this it may be argued that such wholesale surgery necessitates many needless operations, and leads to deaths that would otherwise not occur; that the symptoms of perforation are fairly evident; and that if operation is performed as soon as the perforation is recognised, the condition is not as dangerous as has been maintained.

Although perforation is usually preceded by the local pain and vomiting indicative of appendicitis, there may be no definite premonitory symptoms. With the onset of perforation the

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Tabular List of Cases of Appendicitis.

Number.	Sex & Age.	Variety.	Operation.	Result.	Remarks.
1	M. 22	Recurrent.	Appendicectomy.	Recovered.	Appendix full of soft fæcal matter; small ulcer at proximal end.
2	M. 33	Recurrent.	Appendicectomy.	Recovered.	Great hypertrophy of mucous coat of appendix.
3	F. 33	Plastic.	Drainage.	Recovered.	Very thick fibrinous deposit in neighbourhood of appendix, which could not be isolated.
4	F. 18	Suppurative.	Drainage.	Recovered.	Well localised abscess cavity.
5	M. 27	Suppurative.	Drainage.	Recovered.	No limiting adhesions.
6	F. 20	Suppurative.	Drainage.	Recovered.	Localised suppuration; rigor; complicated by pneumonia.
7	F. 30	Suppurative.	Drainage.	Recovered.	Large localised abscess, which burst into gut during anæsthesia; fæcal fistula, which healed spontaneously.
8	M. 45	Perforative.	Drainage.	Died.	Gangrenous appendix with perforation at apex; fæcal concretion; general suppurative peritonitis.
9	M. 26	Suppurative.	Drainage.	Died.	General peritonitis; temperature 104°.
10	F. 9	Perforative.	Drainage.	Died.	Appendix perforated at tip; fæcal concretion; general peritonitis.
11	M. 50	Suppurative.	Drainage.	Recovered.	Large abscess cavity containing two pints of stinking pus—probably retro-colic; temperature normal.
12	M. 11	Suppurative.	Drainage.	Recovered.	Eight ounces of foul pus; collapsed for five hours after operation.
13	F. 40	Suppurative.	Appendicectomy.	Recovered.	Short inflamed appendix in middle of cavity formed by matted intestines.
14	F. 17	Suppurative.	Drainage.	Recovered.	Several rigors before operation; fæcal fistula followed.
15	F. 23	Suppurative.	Drainage.	Recovered.	Dense adhesions localising the abscess; other attacks followed, and appendicectomy was performed later.
16	M. 12	Perforative.	Appendicectomy.	Died.	Gangrenous appendix; fæces escaping through perforation; general peritonitis.
17	M. 28	Suppurative.	Drainage.	Recovered.	Retro-cæcal abscess; median and lateral incision with tubes in each meeting behind cæcum.
18	M. 32	Catarrhal.	Cœliotomy.	Recovered.	Intense colicky pain; thoracic breathing.
19	F. 38	Perforative.	Appendicectomy.	Recovered.	Fæces issuing from perforation two inches from the tip; few drops of pus.
20	M. 12	Perforative.	Drainage.	Died.	Fæcal vomiting before operation; general peritonitis.
21	F. 53	Suppurative.	Drainage.	Died.	Pneumonia and delirium before operation; general peritonitis.
22	F. 16	Suppurative.	Drainage.	Died.	Great distension and incessant vomiting before operation; fifteen ounces of pus; general peritonitis.
23	F. 24	Recurrent.	Appendicectomy.	Recovered.	Persistent sinus lead to a perforation in the appendix, which was adherent to the pelvic wall.

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24	M. 10	Perforative.	Appendicectomy.	Died	Gangrenous appendix removed from centre of large abscess cavity.
25	M. 40	Recurrent.	Appendicectomy.	Recovered.	Stricture of appendix above a bulbous extremity containing half a drachm of thick mucus.
26	M. 6	Suppurative.	Drainage	Recovered.	A pint and a half of fœtid pus; abscess cavity extended across pelvis; tubes right and left sides of abdomen.
27	F. 6	Tubercular.	Curettage.	Recovered.	Granulation tissue freely scraped away from neighbourhood of appendix; intestines covered with miliary tubercles.
28	F. 51	Suppurative.	Appendicectomy.	Died.	Patient died of cerebral thrombosis and convulsions eight days after operation.
29	F. 25	Recurrent.	Appendicectomy.	Recovered.	Appendix contained few drops of pus; five calcareous lymphatic glands shelled out in neighbourhood.
30	F. 25	Recurrent.	Appendicectomy.	Recovered.	Appendix adherent near tip to anterior parietes; perforation surrounded by adhesions.
31	M. 12	Recurrent.	Appendicectomy.	Recovered.	Dense adhesions binding appendix in iliac fossa.
32	F. 32	Suppurative.	Drainage.	Recovered.	Eight ounces of pus; dense infiltration around abscess cavity.
33	M. 42	Suppurative.	Appendicectomy.	Recovered.	Appendix entirely gangrenous lying along abscess wall; fæcal fistula followed and healed spontaneously.
34	M. 11	Perforative.	Drainage.	Died.	A pint of fæcal matter limited by adherent intestines; death fifteen days after operation.
35	F. 15	Suppurative	Drainage.	Recovered.	A pint of pus in pelvis; abdomino-vaginal drainage; other attacks necessitated appendicectomy later.
36	F. 33	Recurrent.	Appendicectomy.	Recovered.	Appendix densely adherent to cæcum; stump invaginated; fæcal concretion.
37	F. 24	Recurrent.	Appendicectomy.	Recovered.	Appendix as large as one's thumb lying across front of cæcum, and adherent to anterior parietes.
38	F. 15	Recurrent.	Appendicectomy.	Recovered.	Adhesions very dense.
39	F. 30	Recurrent.	Appendicectomy.	Recovered.	Complicated by salpingo-oöphoritis and broad ligament abscesses.
40	F. 28	Suppurative.	Appendicectomy.	Recovered.	Appendix adherent to uterus; complicated by tubo-ovarian abscess; abdomino-vaginal drainage; fæcal fistula from bursting of abscess into rectum.
41	M. 42	Recurrent.	Appendicectomy.	Recovered.	Appendix large as forefinger, distended with mucoid fluid below stricture near proximal end.
42	F. 22	Perforative.	Appendicectomy.	Recovered.	Appendix four inches long, perforated at tip and gangrenous; fæcal masses removed from peritoneal cavity.
43	M. 9	Suppurative.	Drainage.	Recovered.	Rigor before operation; three ounces of pus.
44	M. 25	Recurrent.	Appendicectomy.	Recovered.	Adhesions to cæcum, ileum, and parietes.
45	M. 38	Recurrent.	Appendicectomy.	Recovered.	Appendix adherent behind cæcum; mucous membrane sloughy.
46	M. 12	Recurrent.	Appendicectomy.	Recovered.	Invagination of stump; adhesions out of all proportion to mildness of attacks.
47	F. 32	Recurrent.	Appendicectomy.	Recovered.	Appendix adherent to uterus; numerous and dense adhesions.
48	M. 21	Recurrent.	Appendicectomy.	Recovered.	Bulbous extremity below a stricture one inch from the tip of the appendix.
49	F. 12	Recurrent.	Appendicectomy.	Recovered.	Appendix densely adherent to ileum; Fallopian tube involved in adhesions.
50	F. 23	Recurrent.	Appendicectomy.	Recovered.	Appendix in retro-cæcal fossa; invagination of stump.

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case assumes all the gravity of an acute general peritonitis. The pain, which before may have been felt in the right iliac fossa, becomes more intense and rapidly spreads over the whole abdomen, the vomiting becomes incessant, constipation is practically absolute, and the pulse is small and frequent—the frequency being out of all proportion to the temperature. The general symptoms are at first those of shock, and the temperature may be low, although it may rise to 103° or more if the patient lives for any length of time. The abdomen is at first retracted and the abdominal muscles very tense, but later on there may be general abdominal distension. The face bears the usual expression of acute abdominal disease.

With such symptoms as these there can be no doubt about the urgent need for surgical interference. Everything depends upon their recognition in the early stage, but unfortunately in many cases the operating surgeon is not called in until perforation has existed so long that the patient is almost moribund from a general septic peritonitis.

Now, my contention is that the deaths in these cases are due to the want of recognition of the gravity of the symptoms in the early stage. Only once in this series (Case 42) have I been called in to operate on acute perforative appendicitis within twelve hours of the perforation; on another occasion (Case 19) I operated about fifty-six hours after perforation; and in both these cases recovery ensued.

In every other case I have been called in at a longer interval than the third day, and when the patient has evidently entered upon the final stage of the disease. Surgery under these circumstances is indeed a forlorn hope, and in most instances the certificate of death follows closely after the surgeon's scalpel.

Case 42.—Miss B., aged 22 years, had hypogastric pain and slight elevation of temperature for two days. Eight hours before I saw her she was seized with agonising pain "all over" the abdomen, and the face became drawn. During this time the temperature had risen from 99° to 102°.

At the time of examination the tongue was very furred; the pulse was soft, 135 per minute; respiration was of the thoracic type and 30 per minute; the face wore an anxious expression. The abdomen was moderately distended, the muscles were rigid, and tenderness over the abdomen was general; but tenderness

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and rigidity were both more marked in the right iliac fossa than on the opposite side.

I operated about eleven hours after the onset of the severe symptoms. On passing the fingers towards the appendix a little stinking fluid escaped. The appendix was removed, some small fæcal masses taken out of the peritoneal cavity, the pelvis sponged out, and a drainage-tube inserted. The appendix was about four inches long, gangrenous and perforated at the terminal half inch; its mucous membrane was dark-red from hæmorrhages, and within its interior was a piece of solid fæcal matter resembling a date stone.

The tube was shortened two days after operation, and entirely removed on the third day. Recovery was uninterrupted.

Case 19.—Miss T., aged 38 years. Two days before I saw her she was seized suddenly with violent pains in the hypogastric and right iliac regions, and vomiting. The temperature had gradually risen and the pulse had increased in frequency. At the time of examination the temperature was 102°, and the pulse was 120 per minute.

The patient was lying on her right side, and any attempt at movement caused intense pain. The abdomen was rigid, moderately distended, and extremely tender—the tenderness being greatest over McBurney's point. The facial expression was pinched and drawn.

I operated about fifty-six hours after the onset of symptoms. There was slight matting and a few drops of purulent fluid in the neighbourhood of the appendix. The appendix itself was thickened, and about two inches from its tip was a small perforation from which fæcal matter was issuing. The neighbourhood of operation was sponged out, but not irrigated, after the appendix had been removed. The mucous membrane of the appendix was found in a sloughy condition, and contained two semi-solid, date-stone shaped fæcal masses. The patient made a good, but somewhat slow, recovery.

Case 19 clearly shows that we may save a case after as long an interval as fifty-six hours after perforation, but our aim should be to operate as early as possible after that event if it should unfortunately occur while the case is under observation.

The rest of the perforative cases died, and if we consider the time at which I was called upon to operate it will not be a

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matter of surprise that a fatal septic peritonitis had developed in all of them before operation.

	Time (in days) of operation after onset.
Case 8	4
Case 10	7
Case 16	7
Case 20	8
Case 24	6
Case 34	48

I am not sure that it is right to include the last case in this list, but it is one of the most remarkable I have met with.

Case 34.—W. J., aged 11 years. Forty-eight days before operation the boy was suddenly seized with abdominal pain, vomiting, and temperature of 101°. Three days later the abdomen began to swell, vomiting became a daily occurrence, and gradual wasting ensued. When I saw the patient the abdomen was greatly distended, and there was tenderness in the right iliac fossa, where I thought I could feel a lump the size of a walnut. The flanks were dull on percussion, but the dulness varied with the position of the patient. The general condition was distinctly bad, and the temperature was 102°. The bowels had acted daily.

On opening the peritoneal cavity about a pint of light brown liquid fæcal matter escaped from the pelvis and lower abdomen. In the upper part of the abdomen a mass of matted intestines could be felt; and, adherent to the parietes in the right iliac region, I thought I could feel the vermiform appendix. Sloughs of peritoneum came away, and such portions of intestine as came into view were covered with thick grey exudation. A prolonged operation was out of the question: the cavity was flushed out with saline solution, and a large drainage tube placed in the hollow of the sacrum. At first there was some improvement, but fæces continued to be discharged through the abdominal wound, and the boy gradually sank and died fifteen days after operation.

If I had to choose between the "American plan" of operating on all cases of appendicitis which were not ameliorating at the end of forty-eight hours, and the plan of operating in the last

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stage of an acute perforative appendicitis, I should choose the former, for I believe more lives would be saved.

But I believe that still more lives will be saved if all cases are treated on their merits, and that operation is resorted to as soon as perforation is supposed to have occurred, or to be about to occur.

I have already enumerated the symptoms of perforative appendicitis. In the very early stage it may be difficult to distinguish a perforative appendicitis from the bursting of a pyo-salpinx, the existence of an internal hernia, or other condition giving rise to that group of symptoms indicative of an abdominal crisis and known collectively as "peritonism."

Tenderness over the region of the appendix may here help our diagnosis, and the lapse of a few hours generally makes it clear that an exploratory operation should be performed, even if we are not certain of the actual seat of the mischief.

But though strenuously insisting on the desirability of speedy operation in cases of acute perforative appendicitis, I do not desire to give the impression that we should always wait for the development of absolutely distinctive symptoms.

There are cases of an increasingly severe type where the intensity and continuance of the pain and vomiting, and an unduly accelerated pulse-rate without the development of a local swelling, may make us think that the inflammation is approaching the peritoneal surface, and that perforation may precipitate a crisis at any moment. To attempt to forestall a probable perforation under such circumstances would, in my opinion, be perfectly sound surgery, but in determining on this plan of action much must necessarily be left to the discretion of an experienced surgeon.

We cannot state definite rules in this phase of the disease: to be dogmatic would be imprudent, but in such conditions it would probably be wiser to resort to operation than to strangle the symptoms by the frequent administration of morphia.

The appeal to operation in cases of very severe pain is further strengthened by the fact, which I have ascertained repeatedly from patients, that the pain and discomfort of operation are far less than those of an attack of appendicitis.

We must, however, admit the liability to error in these cases; but they form only a small minority of the total number,

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and the chance of an unnecessary operation is very much less than in the removal of all appendices in which the inflammation is not clearly subsiding at the end of forty-eight hours.

The method of removal of appendix, and of drainage, which is always desirable in case of perforative appendicitis, will be considered later.

2. *In Suppurative Appendicitis.* Though there is not perhaps the same urgency in this class as in the last, operation is equally necessary.

It is true that in exceptional cases of this kind recovery may ensue by the spontaneous discharge of the pus into one of the hollow viscera or on the surface of the body, but the chances of success are much less under these conditions than when operation is performed; and, moreover, there is grave risk of the abscess bursting into the general peritoneal cavity. It is difficult in some cases to distinguish between suppurative appendicitis with its attendant dangers, and plastic appendicitis which may end in resolution: the diffuse colicky pains, gradually limiting themselves to the right iliac fossa, with signs of localized peritonitis and tumefaction, resemble the symptoms of the plastic variety, but the temperature is apt to continue at a higher level—102° or 103°.

The thickening which is felt in the right iliac fossa exists as a smooth globular mass, or as a less definite induration. The percussion note is rarely absolutely dull, and is frequently resonant from the presence of gas caused by decomposition of the abscess and the proximity of the agglutinated intestines. No single symptom is indicative of early suppuration: I have opened a large abscess when the patient had a normal temperature (Case 11). Fluctuation would be decisive later, but the tenderness on pressure and the rigidity of the muscles help to obscure the diagnosis; and to wait for fluctuation would be to court unnecessary dangers.

We usually have to rely for our belief in the existence of suppuration upon the general condition of the patient as to temperature, sweating, and accelerated pulse, and upon a continuance of the illness beyond the time at which an amelioration might be expected in a more simple case.

A rapid, or even gradual, increase in the size of the local swelling may be regarded as fair evidence that suppuration is

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taking place; and the same may be said of a recrudescence of the general and local symptoms after a brief period of apparent improvement. The occurrence of a rigor is also suggestive of pus formation. A rectal examination should always be made in these cases, as it may furnish most important information. In children, especially, a cellulitis extending into the pelvis may be felt by this means; and, in one case, I was able to diagnose the presence of pus, when from the swelling in the abdomen it could not be detected.

Much has been written about the time of operation, but it seems to me that this depends only on the time at which suppuration is diagnosed. This may be during the first week, but is perhaps more common during the second: whichever it may be, operation should be proceeded with as soon as the presence of pus is clearly indicated.

In actual practice it is fairly common to meet with cases in which we are in doubt as to whether pus is present or not. Speaking generally, there is no great harm in delaying operation under these circumstances: if during the next twenty-four or forty-eight hours the local swelling diminishes and the general condition improves, a further delay will be justified; but, should this period be accompanied by an increase in the size of the local swelling, with a more frequent pulse, continued elevation of temperature and tympanites, operation should be undertaken forthwith. The prime object of operation in suppurative appendicitis is the evacuation of the abscess; but it is desirable, though not essential, to remove the appendix when this can be accomplished without increased danger to the patient.

The question of removal of the appendix in these cases is best considered here. That it is not worth while to run any undue risk in this respect is shown by the fact that in only two cases (Cases 15 and 35) of the series was it necessary to remove the appendix for recurrence of appendicitis after the operation of drainage of an abscess at which it was impossible to perform appendicectomy with safety. Operative completeness should give way to the saving of life.

A gangrenous appendix is easily separated, and should always be removed.

In one class of abscess we find the appendix more or less free

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in a cavity formed by agglutinated intestines, and in such cases it is generally best to remove it, for the isolation of the appendix is a necessary part of the means taken for evacuating the abscess; in another class the appendix itself forms part of the abscess wall, and in such cases an attempt to remove it would probably result in contamination of the general peritoneal cavity. An increased experience has, however, proved to me that many appendices can now be removed with safety, which formerly I should have thought it desirable to leave untouched.

These, and other points which have been discussed, are well brought out in the following cases:—

Case 13.—The patient had had several attacks of appendicitis previous to the present one, which began about a fortnight before I saw her. At the time of examination a firm indurated mass was felt in the right iliac fossa above the outer third of Poupart's ligament. No fluctuation could be felt. Pulse 108 per minute; temperature 101°. An incision was made over the indurated area just above Poupart's ligament. On opening the peritoneum an inflamed mass of agglutinated intestines was found. Boring amongst the intestines with the forefinger, I opened an abscess cavity, the walls of which were formed by the adherent coils of gut, and about two ounces of fœtid pus escaped. Projecting into this cavity was a rather short, thickened, and inflamed appendix. After removal of the appendix, iodoform gauze was placed in the abdomen to shut off the inflamed coils of intestine from the rest of the peritoneal cavity, and a rubber tube was inserted. The temperature at once fell to the normal, and the patient was thoroughly convalescent in three weeks.

Case 12.—A week before I saw him the boy complained of great pain and tenderness in the right iliac region, and vomited. The following day the temperature was 102°. After the third day a swelling was noticed in the right iliac fossa, but the temperature fell to the normal and a general improvement took place. On the seventh day the temperature rose to 102°, and the local swelling increased. At the time of examination the right leg was drawn up, and a well-defined tender swelling could be felt above the outer half of Poupart's ligament on the same side. There was impaired resonance over the swelling.

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On cutting down over the indurated area about eight ounces of very foul pus escaped from a large abscess cavity, which passed down into the pelvis. At the upper part of this cavity, and fixed to its posterior wall, a thickened appendix could be felt; but being firmly bound down and forming part of the abscess wall, it was not removed. Drainage was effected by a rubber tube. In two days the temperature was normal, and the patient soon made a rapid recovery.

Hitherto I have been referring to cases of suppurative appendicitis in which the pus is localized, and shut off by adhesions from the general peritoneal cavity, but it must not be forgotten that such an abscess may become diffused. In this case a general peritonitis occurs, and the symptoms approximate to those of the acute perforative appendicitis, though arising much later in the attack. The tumid abdomen, the frequent pulse, and the drawn anxious expression then tell their own tale of extensive abdominal mischief, and speedy surgical interference offers the only chance of life. Our object should be, however, to forestall this condition by operating at an earlier period of the disease in accordance with the principles which have been considered. Of the four deaths which occurred from suppurative appendicitis, general peritonitis had developed before I was called upon to operate in every instance except one (Case 28), which died of cerebral thrombosis and hemiplegia eight days after operation on a patient who had previously suffered from mental aberration.

3. *In Relapsing or Recurrent Appendicitis.* This variety may be regarded as recurrence in an ordinary plastic appendicitis, after an interval of immunity, varying in time from a week to months or even years.

After an attack of appendicitis the chances are between three to one (Hawkins) and five to two against the patient having a subsequent attack. The probability of renewed attacks after the second becomes increasingly greater.

The attacks may increase or diminish in frequency or severity; and though suppuration and perforation are uncommon either of these conditions may occur. In short, it is impossible to foretell the course of events in recurrent appendicitis. We might determine to judge each attack in accordance with its individual severity; but to allow the constant repetition of the

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disease might end in a chronic invalidism, and is attended with much unnecessary suffering and danger. The safety of the operation of appendicectomy undertaken in the interval between the attacks is well known: personally, I have never had a single death in this class. This fact is extremely helpful to us in deciding upon the best course to take in these cases. There is room for difference of opinion, and the feelings of the patient might perhaps be allowed to have some weight; but, taking all the facts into consideration, I think the best and safest plan is to advise appendicectomy in most cases of non-suppurative (plastic) appendicitis: (i) after two mild attacks; (ii) after a single severe attack which has endangered the patient's life; and (iii) where the persistence of local pain and tenderness during the quiescent period suggest the probability of a collection of pus in or around the appendix.

The operation is carried out after the subsidence of all acute symptoms, and after the absorption of the local plastic peritonitis. This absorption generally takes from two to four weeks from the commencement of the attack, but a thickened appendix nearly always remains, and is an useful guide during the operation.

Such then are the guiding principles which I have formed from observation of the different varieties of appendicitis which may require surgical intervention.

These conclusions may be briefly summarised as follows:—

1. It is not desirable to operate upon every case of appendicitis.
2. Even though there be an extensive local peritonitis operation should not be performed if the patient is improving.
3. Operation should be undertaken during an attack:
   (*a*) In perforative cases, and where the symptoms are increasingly severe without local exudation and the occurrence of perforation seems probable.
   (*b*) When the symptoms point to the formation of pus, and in doubtful cases of suppuration

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accompanied by enlargement of the local swelling and increase in severity of the constitutional symptoms.

4. Operation should be undertaken in the quiescent period:
   (*a*) After two or more mild attacks.
   (*b*) After a single severe attack which has endangered the patient's life.
   (*c*) Where the persistence of local pain and tenderness suggest the probability of pus in or around the appendix.

5. The appendix should be removed in all cases submitted to operation, except:
   (*a*) Where the appendix forms part of the firm walls of a localized abscess.
   (*b*) Where the general condition of the patient does not permit a prolonged operation.

B.—Points connected with the Operation itself.

1. *The Parietal Incision and Removal of Appendix.* In cases without tumour the best incision is an oblique one placed at right angles to an imaginary line drawn from the right anterior superior iliac spine to the umbilicus. The incision should be two to four inches long—or even longer—according to circumstances; and about one-third of it should be above, and two-thirds below, the centre of the imaginary line referred to. This overlies the appendix. On reaching the external oblique aponeurosis or muscle it will be found that its fibres run parallel to the superficial incision, and they should be divided in the same direction. On separation of the external oblique the muscular fibres of the internal oblique are seen. The fingers are inserted between the muscular portions of the internal oblique and the subjacent transversalis, and the bundles are forcibly separated upwards and downwards without the use of the knife. This step is of great importance, as the occurrence of post-operative hernia is thereby largely prevented.

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The peritoneum and transversalis fascia are divided after pinching up a fold between two pairs of catch-forceps. Retractors may be wanted to keep the wound open if deep manipulations have to be carried out.

If there is a visible or palpable tumour, the incision should be made with its centre immediately over it, but the following of the direction of the fibres of the external oblique and the blunt separation of the internal oblique and transversalis should here also be adopted as far as possible.

The life of the patient may depend upon our evacuating a localized abscess without opening the general peritoneal cavity, and should there be any doubt whatever about the adhesions of the swelling to the anterior parietes, the incision should be kept as far to the outside of the tumour as possible. By this means we may reach any collection of matter existing in the cellular tissue behind the peritoneum, and we shall in any case avoid the great risk of emptying the abscess through the general peritoneal cavity. Another advantage in keeping the incision well out in these cases is that the abdomen is more shallow in the neighbourhood of the colon, and we are therefore less likely to have to traverse many adherent coils of intestine to reach the abscess than when the incision is more internal.

I have already referred to the fact that in large abscesses the centre is often resonant from the presence of gas.

In suppurative cases the thickened peritoneum is often best entered by boring with the finger-tip, which then enters the abscess cavity and can fully explore its boundaries.

In recurrent appendicitis the adhesions are often firm and complicated, and judgment and skill are required in the isolation of the appendix. The parietal incision follows the lines already indicated, but important adhesions should be separated within view, but sometimes an extra long incision is necessary for this purpose. Under such circumstances the division of some muscular fibres by the knife can scarcely be avoided, but they should be afterwards carefully united.

The appendix when isolated may be removed in various ways. When situated deeply we may have to be content with throwing a ligature around the appendix close to the cæcum, and cutting through it just beyond the ligature. The mucous membrane of the stump should then be touched with pure carbolic or

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nitric acid. Where however the adoption of a more deliberate plan is possible, I think the following method is less likely to be followed by a fæcal fistula: the peritoneum and sub-peritoneal tissues are divided circularly about half an inch from the cæcum, and the "collar" of peritoneum so formed is turned back. The mucous tube of the appendix is drawn out and ligatured close to the cæcum, and is then cut away on the distal side of the ligature. The mucous membrane of the stump is treated with carbolic acid, the collar of peritoneum sewn over it, and the whole is sequestered by taking one or two Halsted's sutures in the cæcum near the seat of origin of the appendix. In some cases instead of ligaturing the mucous tube I invaginate the stump into the cæcum before sewing the collar of peritoneum over it. Either method is quite efficient.

2. *Irrigation and Drainage.* In recurrent appendicitis neither irrigation nor drainage is called for, but in perforative and suppurative appendicitis they are considered necessary by most surgeons.

I have practically discarded irrigation of the abdominal cavity for some years. It is not possible to purify a foul appendicular abscess by irrigation which, by the conveyance of infected material to unaffected parts, is productive of much harm. I firmly believe that more cases of perforative and suppurative appendicitis can be saved by simply mopping or sponging-out the affected area than by futile attempts to "cleanse" the peritoneum by means of a douche.

The one exception may possibly exist in cases of so-called general peritonitis; but even here I am inclined to think it better to turn out as many of the intestines as we can and then cleanse them, rather than to endeavour to get rid of the infected products by irrigating the abdominal cavity with the intestines *in situ*.

Drainage is best effected by carrying a large rubber tube to the centre of infection and walling off the surrounding intestines by means of strips of iodoform gauze. In large abscesses it may be necessary to make a counter opening in the loin. In the female vaginal drainage has a wide field of application in cases of "pelvic abscess," and I cannot speak too highly of its value, for its adoption has resulted in the saving of lives that would have been lost by abdominal drainage alone. It should

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always be adopted where an abdominal section discloses the existence of a large abscess burrowing deeply among the pelvic viscera (Cases 35 and 40).

Case 35.—The patient had been ill for a week with the usual symptoms of appendicitis. At the time of examination the girl had a pale and anxious look; temperature 101°; pulse, feeble, 120; respiration embarrassed. The abdomen was tender and much distended, and dull on percussion over part of the right iliac region; but there was too much tympanites to discover the existence of any swelling. An oblique incision was made over the dull area in the right iliac fossa. A large abscess cavity was discovered in the pelvis, and about a pint of fœtid pus escaped. The whole sacral hollow and true pelvis was occupied by the abscess, the uterus and appendages standing out in the middle of the purulent fluid. The intestines above the abscess were much inflamed, but there appeared to be no adhesions. The appendix was not seen, and great care was taken not to move the coils of intestines unnecessarily. A large forceps was passed up the vagina and bored through the vault into Douglas's pouch. A wide rubber tube about ten inches long was by this means pulled through from the abdominal wound into the pelvis and vagina, and made to emerge at the vulva. The abscess cavity was sponged out but not irrigated. Iodoform gauze was packed round the tube in the abdomen to keep back the intestines from the abscess cavity, and the abdominal wound was partially closed. The patient made a good recovery, but appendicectomy was performed some three months later for a recurrence of the attacks of appendicitis.

After abdomino-vaginal drainage the head of the bed should be raised some ten or twelve inches to facilitate the gravitation of the discharge. Even after abdominal drainage in cases of appendicitis I am in the habit of adopting this postural method of treatment, and I believe it to be of great value. It helps to confine the inflammation to the lower abdomen and pelvis, and it is a well-known clinical fact that pelvic peritonitis is far less fatal than other forms of peritonitis. It may be due to the possession of a diminished power of absorption by the pelvic peritoneum; but, whatever the explanation, this simple means of aiding drainage should not be neglected.

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The lesson conveyed by a study of this series of operations is that all cases of appendicitis should be closely watched. The type of disease may change within an hour, and prompt surgical intervention may be suddenly called for in a patient that has been progressing favourably up to a certain point. Familiarity with the symptoms of all phases of the disease is essential if its dangers are to be averted, and when the course of events points to an unsatisfactory issue, there should be no hesitancy in resorting to surgical aid. A policy of procrastination and deferred hope leads to an unnecessary sacrifice of life.

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REMARKS ON THE CONNECTION WHICH EXISTS BETWEEN THE NOSE AND THROAT AND THE GENERATIVE SYSTEM.

By F. De HAVILLAND HALL, M.D., F.R.C.P.

The intimate relationship existing between the nose and the generative system is shown in many ways. The much greater development of the sense of smell in the male points to his thus being able to search out the female, and the stimulating effect of certain odours upon the sexual system has long been recognized. One of the earliest cases in which I employed the galvano-cautery, for the relief of paroxysmal sneezing, was the case of Mrs. C., æt. 27, who was sent to me by Dr. G. T. Penny, in May, 1886. She gave me a history of hay fever lasting three or four weeks and beginning in June, and stated that as a result of the incessant sneezing she miscarried in October, 1885. When I saw her she was three months pregnant, and as the sneezing had commenced as bad as ever, she was afraid that she would miscarry again. The galvano-cautery was freely applied to both inferior turbinals. In August her husband wrote: "I think it may now be said that she is cured of a most inconvenient and, in her case, dangerous complaint." I heard from Dr. Penny later on that she went her full time and was safely delivered.

In August, 1891, I saw a somewhat similar, though even more characteristic case, as the sneezing seemed to be directly dependent on the presence of the fœtus in utero. The sneezing was very excessive, and the patient complained of great abdominal pain and feared that she was about to miscarry. I adopted the same line of treatment as in the previous case. In the spring of the following year I had a letter from the

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patient, in which she stated that "the treatment was perfectly successful," and that she "was confined on November 13th with a very fine healthy son." In both these cases I had no doubt in my own mind that the treatment prevented a miscarriage.

Gottschalk has recorded the case of a woman who, about two years after the ablation of the ovaries, was attacked with various nervous troubles, and particularly with anosmia. Not the slightest alteration was found in the nasal cavities. Perversions of the olfactory sense are not rare in females during the period of their genital life. Reflex hyperosmia is frequently observed during pregnancy, and Gottschalk asks why should not the removal of the organ, without which pregnancy is impossible, give rise to a reflex anosmia. Dr. Dundas Grant[1] has in several cases observed the disappearance of the symptoms of ozæna after marriage, and Trousseau[2] has pointed out that at the menstrual periods there is generally a great increase in the severity of the symptoms, and cases which, under treatment, have become free from smell for a time, may again be offensive.

Joal maintains that at puberty, as well as at the menopause, sexual excitement causes turgescence of the erectile tissue of the nasal fossa, and that the headache, giddiness, attacks of suffocation, acneiform eruption on the lips, etc., are the result of this turgescence giving rise to various reflex neuroses.

That epistaxis may replace the catamenial flow has been proved by reliable clinical evidence. The case quoted by Fränkel[3] from Obermeier is quite sufficient to establish this point.

The cases of vicarious nasal hæmorrhage occur mostly at the period of puberty, at the menopause, and in rare cases during pregnancy.

Epistaxis occurring at the menopause is probably due to the plethora of the system at that time.

As to whether there is any functional or developmental connection between the tonsils and the sexual organs, opinion differs considerably. I am inclined to believe that there is some such connection, and a case I saw with Mr. Pearce Gould

[1] *British Medical Journal*, 1888, Vol. II., p. 598.
[2] *Clinical Lecture, Sydenham Soc. Trans.*, Vol. III., p. 62.
[3] Von Ziemssen's *Cyclopædia of Medicine*, Vol. IV., p. 152 (English Trans.)

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some years ago supports this view. The case in question was one of undeveloped sexual organs associated with congenital defect of the tonsils. That there is some connection is further supported by the apparently marked effect upon hypertrophy of the tonsils by the advent of puberty. Mr. Pearce Gould[4] has mentioned the case of a family in which the father and each one of six sons suffered from very troublesome hypertrophy of the tonsils during boyhood, which ceased to trouble and considerably diminished at and after puberty.

Another question bearing on the same subject admits of a definite negative answer, *viz.*, whether excision of the tonsils causes atrophy or non-development of the testicles? In spite of the popular view, there is no evidence whatever to support the idea, that excision of the tonsils has any influence on the testes. In reference to this Mr. Pearce Gould[5] writes: "In addition to the large opportunities of observation afforded by the frequency of this operation in this country, there is a piece of evidence which appears to be absolutely conclusive; it is, that in Zanzibar all boys have their tonsils excised before puberty, and that atrophy of the testicles is quite unknown there."

The evidences of the intimate relationship existing between the generative system and the larynx, especially in the female, are numerous. The paper of Dr. Bayer[6], of Brussels, on the "Influence of the Female Sexual Apparatus on the Vocal Organs and Formation of Voice," read before the International Medical Congress in 1881, is a valuable contribution to the subject.

He begins by pointing out that, at the period of puberty, the development of the sexual organs causes an increase in the nutrition of the larynx, less marked, however, in the female than in the male; the alteration being signalized, especially in the male, by the "break" of voice.

Menstruation and pregnancy have a decided influence upon the larynx. At the time of the commencement of menstruation, and at the menopause, various kinds of laryngeal neuroses are observed. The curious cough occasionally met with in

[4] *Clinical Soc. Trans.*, Vol. XX., p. 10.
[5] Loc. cit., p. 11.
[6] *Transactions of the International Medical Congress*, 1881, Vol. III., p. 321.

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girls between the ages of sixteen and twenty—and also in boys, but much more rarely—described by the late Sir Andrew Clark under the name of "the barking cough of puberty," is one of the numerous examples which might be adduced. As confirming the connection of this cough with the sexual system, Sir William Gowers states that he has found it associated with the habit of masturbation, and that treatment had little or no effect until this habit was stopped, and then the patient got rapidly well, whatever treatment was employed.

Türck has reported a case of transitory aphonia at the time of menstruation, and we must all of us have seen cases of aphonia associated with ovarian and uterine disorders.

Landry's case, in which an aphonic patient immediately regained her voice, when the anteflected uterus was restored to its normal position, is a striking illustration of this association.

Bayer mentions the case of a lady, in whom the feeling of a foreign body in the larynx disappeared with the onset of pregnancy; and another patient—a singer—was never in so good a voice as during pregnancy. He quotes numerous examples of the connection between diseases of the female sexual organs and changes in the larynx. The article is well worth reading by all who practise medicine, but especially by laryngologists and gynecologists. It is a useful corrective to a narrow or exclusive view of any special branch of medicine to have brought prominently before us the intimate relationship existing between the most remote organs of the body; "if one member suffer, the whole body suffers."

That the larynx becomes hyperæmic in some women at the menstrual period has been long recognized, and in some instances the hyperæmia gives rise to hæmorrhage from the larynx. It is worthy of note that laryngeal hæmorrhage, though a rare affection, occurs most frequently in women, and more especially in pregnant women or puerperal convalescents.

Bayer[7] has described the case of a young girl suffering from laryngeal and pulmonary tuberculosis, whose larynx was frequently the seat of great œdema at the menstrual periods, which disappeared after some days under an antiphlogistic treatment.

In females suffering from grave and obstinate laryngeal dis-

[7] *Revue de Laryngologie*, 1890, p. 474.

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orders, it is important to remember that the condition of the generative organs may have a potent influence on the laryngeal disease.

M. Ruault[8] has reported the case of a married woman, 39 years of age, neurotic, but suffering neither from tuberculosis, cardiac disease, or hæmophilia, who had for three years spat up small quantities of blood some days after the end of her periods. For some months these hæmoptyses came on some days before the catamenial period and not after. Sometimes in the interval between the periods, the patient also brought up sputa slightly streaked with blood, but this only rarely took place, whilst the hæmoptyses were never absent either before or after the menstrual period.

Laryngoscopic examination made on several occasions proved the existence of effusion of blood, sub-epithelial or sub-mucous, always occupying the vocal cords. M. Ruault regards this case as one of reflex sanguineous fluxion of utero-ovarian origin.

Sir Felix Semon[9] has done good service to medicine by pointing out the frequency with which sensory throat neuroses occur at the climacteric period. He very properly uses the vaguer term "throat" neuroses instead of speaking of "pharyngeal" or "laryngeal" neuroses, on account of the impossibility of localising sensations felt in the throat with any degree of accuracy.

In making a diagnosis of a climacteric throat neurosis "we have to guard against falling into one or two strictly opposite mistakes, namely, of either overlooking some actual and tangible cause of the affection, or, on the other hand, of accusing slight accidental abnormalities of being the real cause of the neurosis." The historic cases of cancer of the larynx which have been before the public of late years, with all the elaboration which is so characteristic a feature of modern journalism, have led to much attention being paid to vague symptoms of pain and discomfort in the throat. Many of the sufferers from climacteric throat neuroses are convinced that they are the victims of cancer, and it is an immense boon to be able to assure the patients that their complaint is a well recognized one, and that their throat symptoms will disappear with their other troubles at the menopause.

[8] *Revue de Laryngologie*, 1889, p. 384.
[9] *British Medical Journal*, 1895, Vol. I., p. 3.

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TWO CASES OF DIVISION OF THE SYMPHYSIS PUBIS AT FULL TERM LABOUR.

By ROBERT SANDERSON, M.B., B.Ch. Oxon.

Case I.

J. H., æt. 34. Admitted to the Hospital for Women, Brighton, in labour, August 15th, 1897.

History.—One previous pregnancy. Child (stillborn) delivered by "instruments" two years ago at full time; much laceration of perinæum.

Pelvic measurements.—

External conjugate...	7¼ inches.
Interspinous	10¾ inches.
Intercrestal	10¼ inches.
Diagonal internal conjugate ...	3⅛ to 3¼ inches.
Probable true conjugate ...	2¾ inches to 3 inches.

Per Vaginam.—Cervix fully dilated, soft, and the examining finger impinged at once on the sacral promontory.

Labour had been going on for thirty-eight hours, the membranes having ruptured two hours before admission. The head was presenting in the first vertex position above the pelvic brim.

It was decided to divide the symphysis, the fœtal heart being clearly audible.

No attempts were made with forceps. A two-inch vertical incision was made, with its centre at the upper margin of the symphysis in the middle line. The tendons of the recti muscles were cut through on each side at their attachments to the symphysis, the finger was forced down behind the symphysis, between it and the bladder, and the symphysis divided from behind forwards by a blunt pointed, slightly curved bistoury.

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The usual antiseptic precautions were taken, and a sound depressed the urethra while division of the cartilage was carried on.

The cartilage cut easily like cheese. After division there was very brisk hæmorrhage, probably from injury to the erectile vascular structures in the neighbourhood of the clitoris, and anterior to the symphysis. A couple of sponges packed into the wound controlled this.

Forceps were applied and a living male child delivered,—easily.

The symphysis gaped remarkably, there being an interval of 2½ to 3 inches between the divided halves. As a consequence there was a rent of the mucous membrane of the vestibule, close to the urethral orifice. This was stitched up with sterilized silk, a catheter was tied into the bladder, a firm belt applied round the pelvis, and the patient put back to bed, the skin wound having been closed with silkworm gut.

Aug. 20th.—Temp. has been up to-day to 100°, and there is some tenderness over pubes.

Aug. 26th.—Stitches removed yesterday; wound healed, but T. last night 101°.

Sept. 2nd.—T. has been up to 100° and 101° at night; bead of pus noticed at lower angle of wound. Wound freely opened with finger, a cavity containing 2 oz. of pus exposed behind the symphysis and leading down to the laceration of the vestibule, the rent in which had, however, healed. Cavity syringed out with 1 in 2000 sublimate solution, and packed.

Sept. 5th.—T. has remained normal. Wound granulating well.

From this time progress was uneventful, and on October 11th the old perinæal laceration, which involved the rectum and produced incontinence of the fæces, was repaired, and she left the hospital well on Nov. 11th.

The child was healthy, and the mother walked well.

Case II.

Mrs. P., æt. 24. Admitted to the Hospital for Women, Brighton, January 7th, 1900.

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She had been observed in the out-patients' room for six months, and was admitted at the 37th week of pregnancy.

She had had craniotomy done twice in her own home at full time by her medical attendant, and this was her third pregnancy.

She came to the hospital because she was most anxious to have a living child.

Pelvic measurements—

Interspinous	10 inches.	
Intercrestal	9½	„
External conjugate	6⅜	„
Diagonal conjugate	3	„
True conjugate	2¾	„ (probable.)

On January 28th, 1900, at 2 p.m., labour pains began, and at 7 p.m. the os was fully dilated, and the head presenting in 1st vertex position above the brim. The cord was slightly prolapsed, but easily replaced out of harm's way.

The symphysis was divided by the same method as in Case I.

Separation or gaping, 2½ inches.

As a consequence there was again tearing of the mucous membrane near to and involving the urethral orifice.

A living male child was delivered by forceps, and the placenta came away with little or no hæmorrhage, and there was in this case no hæmorrhage occasioned by division of the symphysis itself.

The rent in the vestibule was carefully stitched up, and the wound over the symphysis closed with silkworm gut.

A soft catheter was tied into the bladder. The after progress of this case was complicated by an attack of influenza, which was very prevalent at the time, and which produced a troublesome bronchial catarrh and cough.

Otherwise the case was uneventful, the wounds healed without suppuration, and she left the hospital in ten weeks from the confinement.

She had when she left some impairment of bladder control, due to the initial laceration of the urethral meatus.

When last seen in May, 1900, she still complained of some bladder leakage on standing; otherwise she was well and could walk freely.

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The child, which weighed 7½ lbs. at birth, did very well.

In remarking upon the operation of symphysiotomy, as illustrated by the above two cases, it is impossible not to be struck with one fact which is common to them both, and which is doubtless common to many, and further which seems from the very force of circumstances to be inevitable, namely, the laceration or tearing of the structures in the subpubic angle occasioned by the forcible separation of the bones.

And however carefully the actual division of the symphysis may be accomplished, and practically it is an easy subcutaneous operation with the forefinger as a director for the knife, yet the results may be vitiated, and are certainly imperilled, by the fact of this peri-urethral laceration, which may admit septic matter to the subcutaneous wound, and the wound moreover opens up pelvic cellular tissue in the prævesical space.

To attempt to separate the structures in the subpubic angle from their attachments to the symphysis and the pubic rami, as has been suggested, is to merely increase the area of the surgical lesion without to any extent diminishing the probability of laceration.

To control the amount of separation or gaping of the symphysis is impossible. This is determined by the size of the fœtal head and by the space required by it in passing the pelvic brim.

It will be noted that in Case I. suppuration occurred as the result of infection of the wound by the laceration of the peri-urethral mucous membrane.

However carefully the catheter may be employed and the parts cleaned, yet it is almost a certainty that urine will taint the wound and suppuration result. And it was more by good fortune than by good management that Case I. eventually did so well.

This in the main is then the danger of this operation and the cause of its being discredited; apart from this it is comparatively easy and comparatively safe.

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THE TREATMENT OF STRABISMUS.

By GUSTAVUS HARTRIDGE, F.R.C.S.

Strabismus is present when there is a deviation in the direction of the eyes from the normal, so that the visual axes are not directed to the same object. There are two chief varieties—

CONCOMITANT. PARALYTIC.

In this paper I propose to confine myself to the Concomitant variety, with special reference to treatment.

Concomitant Strabismus is usually met with in young people, and is mostly due to defective innervation of the ocular muscles; one eye fixes the object while the other deviates inwards or outwards, so that the retinal images are not formed on identical portions of the two retinæ. At first, diplopia may be produced, but the patient quickly learns to suppress the image of the weaker eye, resulting in loss of binocular vision.

Concomitant Strabismus is generally a complication of some defect in the optical adjustment of the eyes, and is most likely to occur in those cases where, from some cause or other, the vision of one eye is below that of the other, so that the stimulus of binocular fusion is diminished.

The visual acuity of each eye having been noted, we next proceed to test the patient's power of fusion; for this purpose the heteroscope of Mr. Priestley Smith is very useful.

The presence of binocular vision may be further tested by means of Snellen's coloured letters.

The angle of the squint should then be measured with the perimeter and the result recorded.

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The great practical point we have to consider is, the treatment best adapted for the cure of the deformity, and this is by no means so simple as the patient's friends usually think; many of them know that glasses are necessary, while others think that a slight operation will at once effect a cure. The patient seldom notices the loss of binocular vision.

The treatment at our disposal falls under three heads—

OPTICAL. EDUCATIONAL. OPERATIVE.

The optical treatment consists of carefully working out the refraction under a mydriatic, and prescribing this correction for constant use; many cases that are seen early, and in which the vision of each eye is good, are thus permanently cured. Sometimes the eyes are quite straight so long as the glasses are worn, but directly they are removed deviation of one eye takes place. In these cases the spectacles will eventually effect a cure, but care must be taken that they are not left off too soon; they must be worn constantly for one year after the squint has disappeared, and then afterwards for a further period for near work.

This treatment by glasses is much assisted in young children by continuing the use of atropine (grs. ii to ʒ i), one drop being instilled into each eye twice a week for about six weeks or two months.

The spectacles act by equalising the two functions of accommodation and convergence, the atropine acts by stopping accommodation.

In many cases it will be found that the vision of the two eyes is not equal, one eye being more or less amblyopic, so that binocular vision does not exist even with the optical correction, and here we must call to our aid the various devices which are included under the heading EDUCATIONAL TREATMENT; these are: the systematic covering up of one eye; practice with the stereoscope; and the reading bar. All these exercises require the greatest patience and trouble on behalf of the patient's friends, for it is only by conscientiously carrying out these exercises for many months or even years that good results can be expected.

The most convenient way of covering up one eye is to have a small black metal disc with two clips so made that it can be

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slipped over the spectacle glass of the fixing eye; this should be worn for a couple of hours twice a day, and the child encouraged to run about and play; in older children the disc may be worn for reading for a certain time twice a day; care must always be taken that the child really does use the defective eye and does not dodge the metal disc.

By thus exercising the squinting eye the visual acuity is in many cases considerably improved, the awkwardness felt in using this eye is done away with, and the prospects of obtaining binocular vision increased.

BAR READING is very useful, especially in older children. It is carried out with a pencil or a suitable strip of metal held about seven c.m. in front of the book. When binocular vision is present the type can be read without interuption, but if only one eye is used the patient stops when he comes to that portion of the line covered by the bar; continuous reading is not an absolute proof of binocular vision for the patient may learn to quickly alternate the fixing eye so that very slight interruption takes place, but I think this is exceptional.

I have always found the STEREOSCOPE the best instrument for testing and practicing binocular vision. The use of it requires great perseverance on the part of the patient and his friends. Special stereoscopes are necessary, they are made without prisms, but fitted with a clip at each sight hole to take the lenses from the ordinary trial case. These clips are so arranged that their distance can be altered to suit the varying interpupillary distances that may be met with.

The emmetrope will require in each clip a convex glass whose focal length corresponds with the length of the stereoscope. Thus, if the box be sixteen c.m. (as is usually the case), +6D will be required, the object being to enable the patient to see the slide at the bottom of the stereoscope without accommodation. Convenient slides may be made by putting on one side of the stereoscope the upper half of a figure, and on the other the lower half, so that the two halves can be separated or placed nearer together; when the complete figure is seen, then binocular vision is present. Later on a suitable scale may be used, and after this ordinary stereoscopic pictures.

From the experience gained by observing the results obtained in a very large number of cases, I am induced to think very

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highly of the value of the educational treatment in regaining binocular vision in cases of strabismus, even where the vision of one eye is much below that of the other.

After glasses have been worn for a year at least without producing very definite improvement, it may be necessary to consider the advisability of supplementing the treatment by an operation. The operation most usually adopted being division of one or both internal recti muscles. The results of these tenotomies has, in many cases, been most unsatisfactory; the powers of convergence are often so impaired that even when the eyes are fairly straight for distance a careful examination will show that for the reading distance relative divergence exists. In other cases where the eyes appear straight at first divergence gradually sets in.

In addition to these unsatisfactory results a certain amount of deformity is produced. The eye operated on is more prominent; the palpebral aperture is wider; and the caruncle has a sunken appearance which is quite characteristic.

The alternative operation that we have at our disposal is advancement of one or both internal recti muscles. In most cases it will be found necessary to advance both muscles. The advantage of this operation over a simple tenotomy is that the operation is performed on the weakened muscle with the object of increasing its strength. Little deformity is produced, and the eyeball is further enclosed in its muscular sheath rather than being allowed to escape from it, as in simple tenotomies, and there is very little fear that divergence will take place.

In every respect, then, advancement is a more scientific operation than a simple tenotomy.

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A CASE OF BI-TEMPORAL HEMIANOPSIA DUE TO BASAL FRACTURE OF THE SKULL.

By G. BROOKSBANK JAMES, F.R.C.S.

This symptom—always a rare one—appears to be specially uncommon as a result of injury. Through the courtesy of Professor McHardy I am able to publish my notes of the following interesting case.

George Kemp, aged 31, presented himself at the Royal Eye Hospital, on April 10th, 1900, complaining of defective vision. He told the following story:

Fourteen months before, while descending some steps with a heavy case weighing 1cwt. 26lbs. upon his back, he stumbled and fell, his forehead striking the ground, while he received at the same moment the heavy load upon his occiput. He became unconscious, and remained so for fourteen days.

Immediately after the injury (as he was informed later) his nose bled profusely for some hours. The eyelids on both sides and the white parts of the eyeballs became much suffused with blood and there was some prominence of the right eyeball. He had received a scalp wound at the upper part of the forehead and this was united with several sutures and dressed. There is no history of hæmorrhage from the ears, or a discharge of watery fluid from these regions or from the nose.

On recovering consciousness he found that the swelling of the eyelids and prominence of the right globe were still present to some extent, that he had become stone deaf on the right side, and that his mouth and face were drawn to the left. The scalp wound had healed soundly.

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Within a short period he was up and about again, but a certain difficulty in vision, noticed even while in bed, became more troublesome under these conditions. While he saw clearly those objects at which his gaze was immediately directed, those which approached on either hand were not noticed until they were close upon him. He was obliged to turn his head repeatedly to avoid collisions with pedestrians; and to cross the street was a proceeding which caused him great anxiety. These symptoms have remained the same until the present time.

The present condition.—There is nearly complete paralysis of the right facial nerve. The eyelids on this side can be approximated but not completely closed. The right side of the frontalis and the remainder of this side of the face remain immobile on strenuous effort. Sensation is perfect over the whole area of the scalp and face. Deafness appears to be absolute on the right side but there is no lesion of the membrana tympani. The eyeballs are normal, there is some apparent but not real recession of the right. The pupils are equal, but react somewhat more sluggishly than usual to light. An examination of the fields of fixation and the accommodation and convergence amplitudes shows that the ocular movements are normal. The central vision is excellent.

R. V. $\frac{6}{6}$ Hm. + 0·75 D sph. = $\frac{6}{6}$
L. V. $\frac{6}{6}$ Hm. + 0·75 D sph. = $\frac{6}{6}$

An examination of the visual fields discloses the fact that the temporal halves are missing in almost their entire extent. The point of fixation in both eyes is left intact.

The line of separation passes in the right eye from below (where it trespasses to some extent on the nasal field), upwards and to the temporal side, passing the point of fixation at 10° and leaving a sector above, where the light, form, and colour sense are present in almost normal degree.

In the left eye the line has the same direction. It does not, however, approach on the nasal field, its starting-point being at the lower end of the vertical axis. The sector left above in the temporal half is also less in degree.

The visual fields for white and colours are apparently somewhat concentrated. This is, however, when tested with the usual

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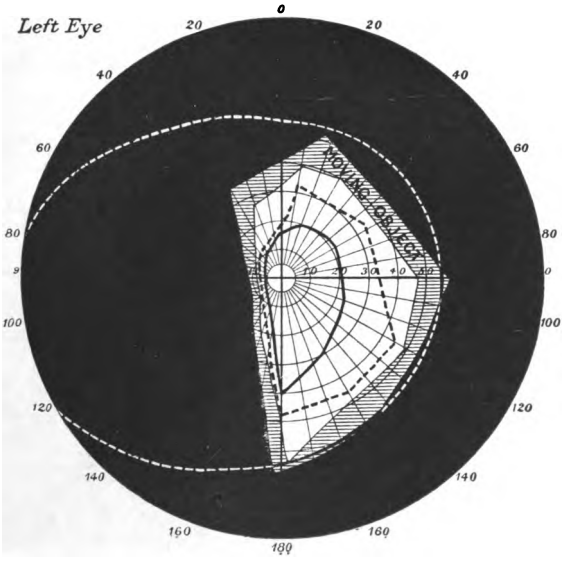

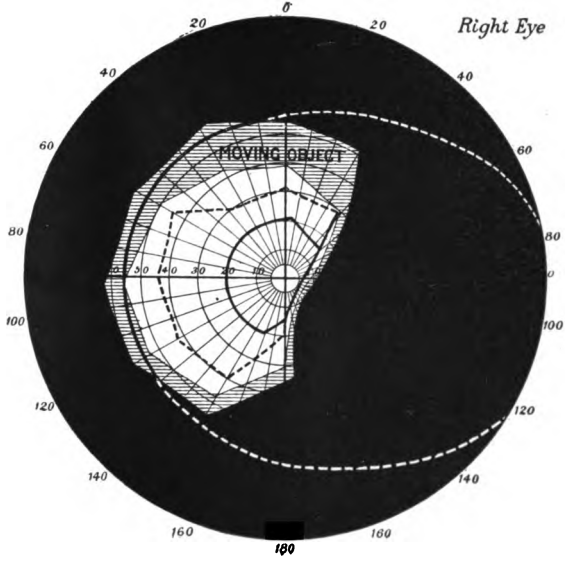

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R. V. $\frac{6}{9}$ Hm. + 0·75 D sph. = $\frac{6}{6}$
L. V. $\frac{6}{9}$ Hm. + 0·75 D sph. = $\frac{6}{6}$

An examination of the visual fields discloses the fact that the temporal halves are missing in almost their entire extent. The point of fixation in both eyes is left intact.

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In the left eye this line has the same direction. It does not, however, encroach on the nasal field, its starting-point being at the lower part of the vertical axis. The sector left above in the temporal half is also less in degree.

The nasal fields for white and colours are apparently somewhat constricted. This is, however, when tested with the usual

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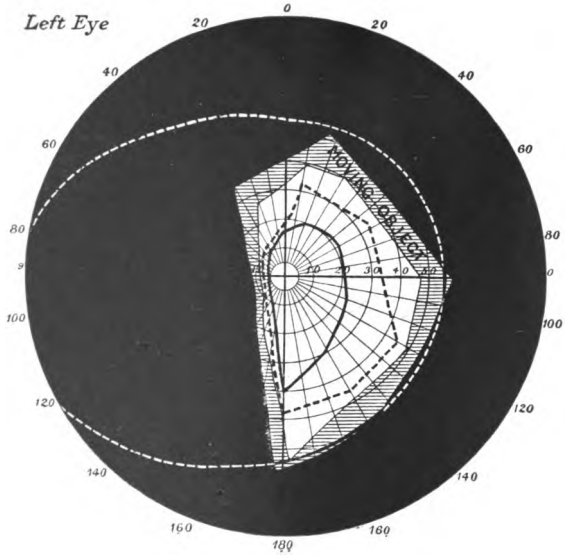

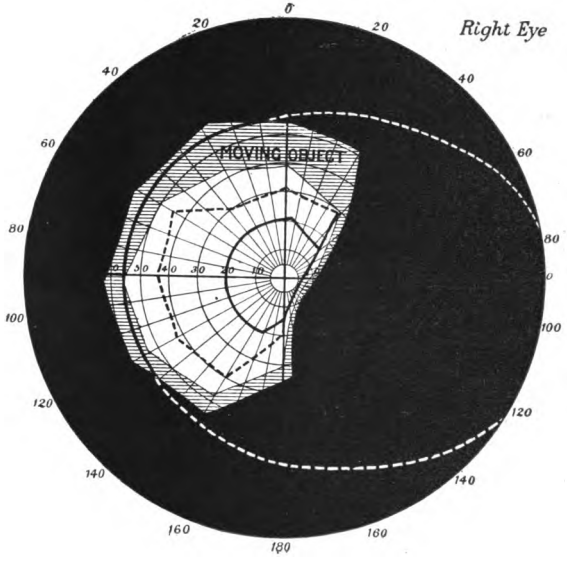

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objects, and is shown in the chart appended. When coloured lights four-candle power in intensity are used from an aperture of 2 m.m. they are readily recognised to almost the periphery of the field.

The hemianopsia involves the senses of form and colour, but not completely that of light, which when of a certain intensity is recognised as a glimmer, and in places is accurately projected. The pupils on careful examination by the method suggested by Schmidt Rimpler show the hemianopic reaction. This is indicated by a definite sluggishness rather than by a complete absence of the response to light.

The fundi are healthy. There is no definite or even suspicious pallor of the discs; their margins are clear from haze, and the vessels are normal in size.

The following points are of especial interest in the case :—

1. The excellent central vision after the lapse of time, two years since the injury.
2. The nearly typical limitation of the affection.
3. The healthy appearance of the discs and fundi.

Chiasma lesions due to injury and so definitely confined to both fasciculi cruciati must be very rare. I can find no case so typical as the above in literature. Several examples of unilateral temporal hemianopsia have been recorded by Schweinitz and C. S. Bull. They were presumably due to fractures through the orbital plate. Total blindness of one eye, with extensive loss of the field in the other, and due to gross injury of the chiasma and tract, have also been reported. A case is recorded by Mr. John Morgan in the *British Medical Journal* for April, 1897. A man fell on his head from a lofty scaffolding. He became unconscious and for some time suffered from cerebral irritation. He bled profusely from the nose and vomited blood. The facial nerve on the left side was temporarily paralysed. His vision became very bad and atrophy of both optic nerves ensued. The fields, which were roughly taken at a time when atrophy had supervened, showed the existence of bi-temporal hemianopsia.

The presence of the hemianopic pupil is of interest. It was first described in bi-temporal hemianopsia by Sequin, who records three interesting examples. It is probably generally present in a typical case if carefully looked for. The fact that

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the fixation point is generally left intact in these cases inclines one to believe that Schmidt Rimpler is right in his view as to the varying arrangement of the macula fibres in the tracts. With regard to the injury itself, the view I should take in the case is that the fracture has traversed the right petrous bone and the body of the sphenoid and optic groove, and that but little inflammatory action has ensued.

The important fact that the patient has now enjoyed for two years good central vision and a fair nasal field, would naturally lead one to hope that matters may remain *in statu quo* in the future, and that progressive atrophy, which is the rule in most of these injuries, may not supervene.

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NOTES ON SOME CASES OF (?MALARIAL) IRITIS, OCCURRING IN PERSONS THE SUBJECTS OF MALARIAL FEVER AND RELIEVED BY QUININE.

By ARTHUR T. WHITE, L.R.C.P., M.R.C.S.

Late Medical Officer to the Uganda Protectorate, Equatorial Africa.

The discovery of a blood parasite in malaria, made by Laverar in 1880, followed out and amplified since by Golgi, Marchiafava, Grassi, and many others, both in the pathological and clinical aspects of the disease, has led to the recognition of a malarial origin in many morbid conditions in which such a cause had been hitherto for the most part unsuspected, and, if suspected, had—until the recent recognition of the necessity for a routine examination of the blood—to depend for proof upon the reaction of the disease to quinine. But it must always be understood, however, that the reaction to quinine is of greatest value when the drug is administered in the light of the microscopic findings.

While there is but little doubt that there are many conditions which depend for their origin on the influence of the parasites of malaria, one has at the same time to bear in mind, as has been so clearly pointed out by Dr. Manson, that as the very result of these researches, observers have been only too apt to ascribe many conditions to malarial causes upon but the slenderest foundations. Hence it is that we find cases of peripheral neuritis with a previous history of mere tropical residence recorded as malarial in origin; cases which might with equal

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truth be alcoholic or even arsenical. The writer has quite recently seen a case of neuritis in a gentleman who for some years had had his residence in a highly malarious country, where he had had frequent attacks of, from their history, undoubted malarial fever with severe subsequent cachexia, for which he had been taking over a long period, at first by medical advice, later on his own responsibility, considerable quantities of an American preparation of arsenic in "tablets." When seen by the writer he had symptoms of severe peripheral neuritis, chiefly in both lower extremities, with marked anæmia and some œdema of the feet. He had been quite recently under the care of a practitioner in England, who had been treating the supposed malarial cachexia, anæmia, and neuritis (there was also some trigeminal neuralgia) with quinine and acid solution of arsenic, with an obvious result. The diagnosis had been made on the previous tropical residence, and notwithstanding that the case remained intractable to quinine, no examination of the blood had been made since his return. As soon as the arsenic was stopped all the symptoms rapidly abated under suitable treatment.

Now, while it is true that in two of the following cases no microscopic examination was made, yet the cases were clinically so like the one in which a parasite *was* found, and reacted to quinine with such marked and immediate results, that the writer feels justified in calling them cases of malarial iritis, or rather of insisting on the probability of their malarial origin. Cases of true malarial iritis are far from common, and of the few recorded in medical literature still fewer bear investigation, in that other possible causes, such as syphilis or rheumatism, are difficult to exclude. This is all the more surprising in that diseases of the other tissues of the eye, such as the conjunctivitis described by Schweinitz, the dendritic keratitis of Van Milligen, and an optic neuritis of a form distinct clinically from quinine neuritis (see Manson's *Tropical Diseases*, ed. 1900, p. 75) have all been from time to time described in medical literature, and what is more to the point, with very clear evidence of their malarial connection.

The three cases which form the subject of these notes had all to my knowledge suffered from malarial fever acquired while residing in East Africa, either in the Uganda or East Africa

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Protectorates, where malaria and its malignant form, commonly known as "blackwater fever," are both very common.

A. S., Soudanese, a sergeant in the Uganda Rifles, stationed at Machakos in British East Africa, was seen by the writer, who was in medical charge of the station in the absence on leave, of the Protectorate medical officer, Dr. Mann, in June, 1898, and was then suffering from severe photophobia, with dilated, fixed, and discoloured pupil, and an intensely injected conjunctiva. There was no history of syphilis, and his wife and family, who were both examined later on, were quite healthy. As is commonly the case with Soudanese, there was a great deal of acquired and congenital syphilis in the man's company. The attack had come on suddenly in the evening, after musketry practice in a hot sun and severe glare. The patient had only been away from hospital for two days, where he had been for a week previously treated for malarial fever of a quotidian type, with some splenic enlargement. During this time there had been no examination of the blood, as the writer's microscope was not available, owing to difficulties of transport, the result of the then existing mutiny, and there were at the time no appliances for microscopic examination provided in the Government station hospital. As the patient shewed no signs of improvement after three days under atropine and hot fomentations, he was put on twenty-grain doses of salicylate of soda. Owing to the severe pain at night, chloral had to be given. On the evening of the eighth day of the disease, the writer mentioned the case, and remarked on its obstinate resistance to treatment, to Capt. Hinde, the District Officer, who had been at one time a medical officer in the Congo Free State. He suggested that it might possibly be a case of malarial iritis, of which he had seen cases when on the Congo with Baron Dhanis' Expedition in 1895, and recommended that the patient should be at once put under quinine. This was done the next day; five-grain doses three times daily, with an aperient, giving marked and immediate results as regards the pain. Within a week the severe pain and photophobia had cleared up, leaving behind a few anterior synechiæ. In this case it will be seen that the man was just recovering from a malarial attack for which he had been treated by quinine. When discharged to duty, he was ordered to present himself for quinine every

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morning at the dispensary and had not done so, so that at the time the attack came on he had been for some days without any quinine.

The second case occurred in a Soudanese private, B. S., also of the Uganda Rifles, who came to the dispensary at Machakos in the end of July, 1898, with a history of severe pain in both eyes, with lacrymation and photophobia, which had occurred suddenly, first in one eye and then in the other, some eight days previously. He had been seen in my absence by a medical man who was passing through the station, and had been ordered atropine and hot applications. Owing to writer's absence from the station with a punitive expeditionary column, he was not again seen till a week after the onset, when there was, according to the patient's story, no improvement. Both eyes were severely injected, the pain and photophobia were severe, and there was a diffused haziness in the deeper layers of one cornea, with a fixed irregular pupil of a muddy brown colour. The patient denied any history of syphilis and showed no evidence of it, but admitted having exposed himself to chance of contagion among the Masai prostitutes, who are mostly infected, previous to his being married. Unfortunately I did not see his wife and child as I was leaving the station again directly with a military caravan for up-country, and in the bustle consequent on our return from the expedition, and in the hurry of preparations for an immediate departure, the matter was forgotten. However, remembering my previous case, the man was put on large doses of quinine, with the rapid relief of the pain, and when I left the station three days later he was practically well. There was a history of frequent malarial attacks for some years, ever since he had served in the Unyoro column on the Nile valley, a hot-bed of severe malaria. My notes do not mention how long previously he had had an attack, but it was noted that his spleen was slightly enlarged.

It could not be said that the station of Machakos itself was malarious, the climate being mild and temperate, and the country open grassy plain and free from swamps, but it was so situated at some 3,500 feet above the sea, opposite to a long gap in the hills, through which at night, after sundown, for a great part of the year, a cold wind blew very strongly, hence

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chills were frequent and latent malaria became acute. This was specially noticed during the time the writer was there in May–August, 1898. As the station was on the main road to Uganda from the coast, caravans came through constantly with English officers and officials proceeding from rail-head to Uganda, the scene at the time of the Soudanese revolt, and it was then noticed that two out of every three officers passing through suffered from malaria, many of them for the first time since their landing at Mombasa.

In this case there was no evidence of syphilis, beyond the history of possible exposure, nor of rheumatism, and for reasons already mentioned, the blood was never examined by the microscope, but the history of the case and the quinine reaction point strongly to malaria.

In the third case I was called to see an Englishman in Government service at Luba's Fort, a station on the Victoria Nyanza shore, in January, 1899, then on his way to the coast from up country. He wrote to me that he was suffering from "ophthalmia." When seen, both eyes were very painful and there was considerable photophobia, with, on further examination, evident iritis, as shown by his discoloured, dilated, immobile pupil. He told me that the attack had come on two days previous to his arrival at the station, when he had been travelling in an open canoe from Port Alice, some three days away by water along the N. shore of the Victoria Nyanza. He had been exposed to the great heat of the sun and consequent glare from the water, having failed to put up an awning in the boat, as should be done by every European travelling in this way. Thinking it to be an ordinary ophthalmia, such as is fairly common in hot climates, he had bathed his eyes as well as he could with boric acid lotion, but without much relief, and when seen he was in a good deal of distress, from the pain in his eyes and also what he called neuralgia, severe pain over the distribution of the supraorbital division of the fifth nerve, which was accompanied by profuse lacrymation. There was some conjunctival injection with a slight muco-purulent discharge. Since the pain in his eyes began he had been feeling "hot" at night and was "not able to get to sleep." His history was that he had had while up country along the valley of the Somerset Nile a good deal of fever, but had not had blackwater fever,

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and had not taken quinine regularly, but only during the attacks. His last attack, which from the history was of the bilious remittent type, had been some five weeks previously. His spleen was enlarged to rather more than one finger's breadth beyond his ribs and there had been some discomfort and tenderness over the liver, which had passed off while he was on the march. He described his comsumption of alcohol as "moderate," which I believe is a suitable adjective in his case. At this time there was only a very scanty supply of medical stores available in the station, in fact, little but blue pills, quinine, and Dover's powder, as the stores for the Protectorate, which should have come up long before, were detained at the coast for want of transport, which for some months previously had been monopolised taking up complete and expensive rations for the Biluchi regiment, then in Uganda. However, with some "tabloids" from my hypodermic case, I managed to make some atropine drops and with these and compresses of trade calico wrung out of hot water, and covered with the waterproof lining of a sponge bag, I managed to make him more comfortable. For the first three days of his stay in the station he got slightly better, the pain and lacrymation abating, although the dimness of vision and photophobia remained much the same. On the afternoon of the fourth day, I was called to him and found him with a temperature of 103·6, in the hot stage of a malarial attack. It appeared that during the night previously he had had an attack of acute diarrhœa and belly-ache, following on a meal of sardines tinned in oil, which had been opened the day before, and as there had been some rain during the night, he had probably got chilled in going to and from the latrine, which was some distance from his tent. With the onset of the fever his iritic symptoms became worse, and the pain intense, together with some increased dimness of vision, accompanied by a cloudy aqueous, and punctate deposits on the posterior surface of the cornea. As he was suffering a good deal from the fever and the pain, I gave him six five-minim tabloids of Burroughs and Wellcomes' tinct. opii, which I happened to have by me. This sent him to sleep and into a profuse sweat in about half an hour. In the light of the other cases, I decided that quinine might relieve his iritis as well as his fever, and with a view to rapid effect, as soon as the

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sweating began, I gave him three grains of quinine bi-hydrochloride, which is readily soluble in water, by intra-muscular injection, and in four hours another three grains. By the morning the fever had gone, and there was very marked alteration in his eyes; the pain had gone and though there was some congestion of the circumcorneal zone and some marked discomfort, yet it was much less than before. The next day he had a slight return of the fever, though he was taking five grains of quinine three times a day, but that and the iritis gradually abated, and when he left the station some days subsequently, the irregularity of the still dilated pupil from anterior synechiæ was the only trace of the attack left. He was advised to continue his quinine, five grains daily, till he left the country, and with the exception of some slight attacks of fever on the voyage, he remained well till the end of 1899, since when I have not heard of him.

With regard to his blood, this was not examined till the morning when the feverish attack began. Luckily my travelling microscope (Major Ross's pattern) arrived from another station, and I was able to examine the blood in fresh films. Under a $\frac{1}{12}$ oil-immersion, there were numerous intra-corpuscular parasites, of a large size (filling nearly the whole of the corpuscle), with fine pigment granules in many of them. Amœboid movement was present in a fairly active form. There were no crescents seen, but a few parasites were apparently "ring shaped." Many of the infected corpuscles seemed larger than normal.

The blood was examined once again on the morning of the slight rise of temperature following the acute attack. There were a few pigmented parasites, but so few that careful searching was necessary to find them. There was a small amount of free granules of pigment. The general size and appearance was that of the benign tertian parasite. It was not possible to examine stained specimens owing to lack of appliances.

In this last case there was no history of syphilis obtained. He had never had any symptoms pointing that way, though he had exposed himself to the risk of contagion. Syphilis and gonorrhœa were both very rife in the stations of these Protectorates, particularly among the Soudanese women, and also in stations where there are Masai prostitutes. Moreover in

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Uganda proper, where the women folk are of a somewhat easy virtue, there is a good deal of disease. But in none of the cases was there any direct evidence of syphilis or rheumatism. Rheumatism, except in those who have had it elsewhere, is as far as I am aware, unknown in Uganda. Gout, another cause of iritis, was not present either. Accordingly, in the absence of other causes and in view of the associated malaria, I am inclined to the view that these cases are malarial in origin. In each case the reaction to quinine was most marked. To those interested in the subject I would recommend a short but excellent article, by Major M. T. Yarr, R.A.M.C., in the *Journal of Tropical Medicine* for December, 1899, which, together with the matter contained in his paper read before the annual meeting of the British Medical Association in 1898, gives a great deal of information about the known facts of the relation of malaria to eye diseases, more than can be found in any of the published works in English on ophthalmology or tropical disease with which I am acquainted.

To Mr. E. J. L. Berkeley, C.B., late H.M. Commissioner and Consul-General in Uganda, I am indebted for permission to publish these cases.

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CASES UNDER THE CARE OF MR. SPENCER.

Extensive Prolapse of the Rectum and Uterus in Old Women, due to Ovarian Cysts.

I have had to operate upon two very similar cases, and have employed the earlier ovariotomy method of fixing the pedicle in the abdominal wall with a very satisfactory result. As a method of relieving uterine prolapse this plan has been recommended by Keith, but, as these cases show, it also prevents a recurrence of the prolapse of the rectum.

In July, 1895, I was asked to see a patient aged 73, by Dr. John Morgan, of South Tottenham. She attributed the prolapse to the strain of nursing her husband. The prolapse of the uterus had appeared, then that of the rectum, the latter for about six months. The uterus and prolapsed vaginal wall had become covered by almost skin-like epidermis, there was an old perineal rupture, and the rectum, which was prolapsed for three inches, formed a red, ulcerated and bleeding mass, which confined the patient to bed. Otherwise she was healthy. The abdomen had been enlarging lately, but she had not paid much attention to it. A bimanual examination proved the existence of a thin-walled ovarian cyst. At the operation a partially adherent right ovarian cyst was removed, also a left ovary the size of a hen's egg. The right pedicle was then sutured to the abdominal wall with silk which had been used for tying the pedicle. This fixation of the right pedicle in the abdominal wound completely removed the uterine rectal prolapse.

After recovery she was fitted with a belt, and for some two years remained well. She then neglected the belt, and a ventral hernia developed, but no recurrence of the prolapse. I subsequently removed one breast for a rapidly growing tumour, microscopically a most malignant-looking carcinoma, but I made

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no attempt to remove axillary glands. Later still the ventral hernia became inflamed, and a foul abscess occurred. This in its turn healed, and the patient finally died suddenly, it was supposed from apoplexy, aged 78, some five years after the operation, no recurrence of the uterine or rectal prolapse having occurred.

The second case, a thin old woman, aged 66, had suffered from chronic bronchitis; twelve years ago she attended the Hospital with uterine prolapse, and for nearly two years had had prolapse of the rectum. I saw her first with Dr. Pollock in his Out-patients' Room; the uterus was covered with skin-like epidermis, the rectum was prolapsed for six inches and bleeding. We found a small ovarian cyst on bimanual examination. She was therefore admitted under Dr. Potter, but for some weeks no operation seemed practicable on account of her bronchitis. The prolapsed rectum was covered by oiled lint, but the prolapse immediately recurred after reduction.

At the operation a multilobed ovarian cyst was found on the right side, wedged in the pelvis, without adhesions, and with a long pedicle. The ovary on the left side was cystic, but not enlarged. Both pedicles were tied with interlocking kangaroo-tendon ligatures, the free ends of which were then used to draw together the peritoneum and muscle of the abdominal wall, thus fixing both pedicles in the abdominal wound. Beyond being troubled by the bronchitis, the patient recovered well and left the Hospital, wearing a belt, without any sign of prolapse, either of the uterus or rectum.

Had no ovarian cyst been present, the prolapse in these two cases might have been cured by shortening the round ligaments through an inguinal wound on each side (Alexander's operation). But the necessity of operating for an ovarian cyst naturally led to the adoption of the operation above described.

As regards diagnosis, it would be easy to overlook an ovarian cyst in such cases, owing to the cyst lying in the pelvis, and the general laxity of the abdomen. An extensive prolapse, especially when it includes the rectum, should entail a bimanual examination, when any tumour will be discovered.

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A Case of Persistent Nocturnal Enuresis in a Female. Treated by Torsion of the Urethra. Gersuny's Operation.

J. K., a maidservant, 18, was sent to the Hospital by Dr. F. R. P. Taylor, Medical Superintendent of Darenth Asylum. She had always been subject to nocturnal enuresis, especially the last eight years; micturition had been always frequent by day, but not involuntary; she had had no previous illness except measles; her mother had died when she was five weeks old; her father, six sisters, and one brother were alive and well.

Six months before she had been an in-patient of another London hospital for the enuresis.

She was a well-nourished, rather pale girl, with no complaint except the enuresis. She passed urine involuntarily during sleep, practically every night, and the usual remedies had entirely failed to produce any improvement.

No organic disease could be discovered; in particular, there was no ovarian tenderness. Under an anæsthetic the bladder was sounded, then a full-sized urethral speculum was passed, and the bladder examined directly by electric light. Except that the bladder was a contracted one, nothing was discovered.

After consultation with Dr. de Havilland Hall, she was first treated by distension of the bladder daily, then with the electric current by Dr. Abrahams, until the rheophore formed a sore on the back. Success has been obtained in such cases by these measures, but in this one neither had any influence. She was also awakened every two hours, prevented from sleeping on the back, and given large doses of belladonna. Three months were occupied by these measures without influencing the enuresis.

I then dissected up the urethra and twisted it through 90° at least near the hinder end, and through a semicircle or more at the meatus, fixing the urethra in the twisted position by horsehair sutures, after inserting a catheter. The catheter was removed after four days, and the sutures in a fortnight. She had a sudden fever three weeks after the operation, the temperature reaching 105° F., and taking ten days to return to the normal. As no other explanation seemed to apply, this

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attack was supposed to be one of influenza. At any rate, it did not provoke any recurrence of the enuresis, and she left the hospital six weeks after the operation, having had no enuresis at all since the removal of the sutures, and the micturition was of normal frequency and without pain or other difficulty.

In the absence of any knowledge about this affection the treatment adopted is a purely empirical one. In the absence of any discoverable organic lesion, the incontinence has been ascribed to a congenital deficiency in the normal tone of the sphincter. The operation of twisting the urethra would have the tendency to obstruct the outflow, but it is not clear how the tonic action of the sphincter can be thereby influenced. Indeed, the dissecting-up of the urethra might be thought to, if anything, injure the nerve supply, and impair rather than improve the normal tonus.

The chief points in the operation are not to twist the urethra excessively, and to tie in a catheter for a few days so as to lead off the urine. This will allow of healing going on without the danger of setting up such an obstruction as to burst through the sutures.

The patient returned ten months later with some relapse. The meatus urinarius was freely cauterized in the hope of setting up a certain amount of constriction. The urethra itself was found to be long and to present resistance to a medium-sized catheter.

Congenital Hypertrophy of the Neck of the Bladder in a Boy.

A. C., a healthy-looking boy, aged 9, attended the Surgical Out-patients' Department under Mr. Ryall, in January, 1900, complaining of pain and frequency of micturition. At the age of 3, he passed, on several occasions, blood in the urine. Two years ago he was circumcised in order to relieve the pain in passing water.

Mr. Ryall sounded the boy on two occasions without finding a stone. Four months later the symptoms continued, increased frequency of micturition, especially by day, but also at night, and pain when passing water which extended along the dorsum

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of the penis to the tip. Under an anæsthetic a child's sound was passed, but nothing definite was met with whether the bladder was distended or empty. The bladder was a large one, capable of being distended to the umbilicus, and seemed rough near the trigone.

I decided to explore the bladder on account of the long continuance of the symptoms, an encysted calculus appearing to be the most likely condition. On suprapubic cystotomy no stone nor concretion was found, but the neck of the bladder bulged for one inch into the bladder, was thickened and hard, and the interureteral band was very marked.

Under the guidance of the finger in the bladder, Lister's graduated sounds were very carefully passed. There was at first resistance to the passage of No. 5, gradually No. 12 was reached. The bladder was closed with kangaroo-tendon sutures, and the skin wound, united at the upper part, was left opened near the pubes, to avoid any possible extravasation of urine. The patient made a good recovery. A month after his return from the convalescent home there were no symptoms at all. It seemed unnecessary, even, to pass a sound, and since there has not been any tendency to recurrence.

The common instance of this kind of congenital hypertrophy occurs at the pylorus, and has become recently of surgical interest; for children have been operated upon, in several instances successfully, for the relief of the obstruction. I do not know of any case where the hypertrophy has been demonstrated in the bladder, although the treatment by passing sounds has often been recommended for incontinence.

A second boy has recently been in the Hospital with identical symptoms, not relieved by circumcision and no sign of stone being discovered. He also was dilated up to No. 12 (without making a suprapubic opening) and has remained well for two months.

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PICROTOXIN AND SENECIN.

By Dr. MURRELL.

These drugs have nothing in common except that they are both very useful and somewhat neglected remedies.

I.—Picrotoxin.

Picrotoxin is a neutral crystalline principle, not an alkaloid, and probably not a glucoside, obtained from the *Anamirta paniculata*, the Cocculus indicus.

Cocculus indicus—or *Coque de Levant*, as the French call it—is a strong climbing plant belonging to the natural order Menispermaceæ, the order from which we obtain Calumba and Pareira. The cocculus grows freely in the eastern part of the Indian peninsula, in Eastern Bengal, and in the Malayan Islands. The part used in medicine is the fruit, a berry between a pea and a bayberry in size, consisting of a dark-brown exterior enclosing a wrinkled, bivalved shell and a yellowish, oily seed. In addition to picrotoxin, it contains an active principle, menispermin, combined with cocculinic acid.

The word "cocculus" is derived from the Italian *coccola*, signifying a small, berry-like fruit. As the fruits were originally imported into Italy from the East and had no special name they were called *Coccole di Levante* or *Cocca Orientis*. They were first described by Ruellius in 1536.

Cocculus indicus is largely imported into this country from Bombay and Madras. It is said that in one year 2,500 bags were entered. As its consumption for legitimate purposes must of necessity be small, it is difficult to find any reasonable explanation of the fact. It is probable that the greater part is reshipped to the continent.

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Cocculus indicus is or has been used for the following purposes:—

1. By Poachers to catch Fish.—A bag containing the berries is towed at the stern of a boat, which is then rowed down stream. The fish are stupefied, and float on the surface of the water. As they drift past the boat they are collected and immediately gutted, the carcase being washed in clean water. By this means a large haul is made noiselessly and in a few minutes. The fish are not always eaten with impunity, and sometimes give rise to symptoms of poisoning. The barbel long resists the action of the drug, and as it takes a large dose to kill it its flesh is especially dangerous.

2. As an Adulterant of Beer.—Its use for this purpose is now prohibited, but in former times it was customary to add three lbs. of the cocculus to every ten quarters of malt. In making porter it was found to add an inebriating quality which readily passed for strength of liquor.

3. To Hocuss Sailors.—Some years ago it was extensively employed by "pimps," whose custom it was to hang about the docks and rob seamen recently returned from a long sea-voyage of their savings.

4. To destroy Pediculi.—For this purpose it is undoubtedly useful, although it is less commonly employed than Staphisagria. The *unguentum cocculi*, which was at one time extensively used, contains eight grains of cocculus indicus in an ounce of prepared lard.

5. As a source of Picrotoxin.

Picrotoxin has a powerful physiological action, producing in toxic doses epileptiform convulsions. It stimulates all the motor and inhibitory centres in the medulla, especially the vagus and respiratory. Its therapeutic uses are the following:

1. To Check the Night-sweating of Phthisis.—For this purpose it should be given in a pilule containing one-sixtieth of a grain, made up with sugar of milk and glycerin of tragacanth. One pilule is given at bedtime, and another if necessary in the early hours of the morning. It seldom fails and is a reliable remedy.

2. For Parasitic Skin Diseases, both vegetable and animal.—It is used in the form of the *pigmentum picrotoxini*, made by dissolving 8 grains of picrotoxin in 4 ounces of glacial acetic

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acid, and adding 4 drachms of castor oil and 16 minims of oil of eucalyptus.

3. As a Nervine Tonic.—For this purpose the *liquor picrotoxini aceticus* is employed. It is made by dissolving 8 grains of picrotoxin in 4 drachms of glacial acetic acid, and adding distilled water to 4 ounces. The dose is from 2 to 12 minims, and it may be added to any acid tonic mixture.

4. In the Treatment of Functional Impotence.—It is said to be most useful in the senile variety. It may be given either by mouth or hypodermically in the form of the *injectio picrotoxini hypodermica*, made by dissolving 1 grain of picrotoxin in 360 of water and filtering. The dose is from 3 to 6 minims.

Although the range of action of picrotoxin is limited, it is a very useful therapeutic agent, and its effects are well worth studying.

II.—Senecin.

This is a substance obtained from *Senecio Jacobœa*, the common Ragwort, *Senecio aureus*, and other species of *Senecio*. It is probably a mixture of the two alkaloids, senecin and senecionine. It is usually given in a pill, in 2-grain doses, three times a day, and is one of our most valuable remedies in the treatment of functional amenorrhœa.

The literature of Senecio is now very extensive, and a great deal of work has been done in this direction during the last two or three years.

Grandval, and Lajoux, and Lutz have worked at the chemistry of the subject, whilst Dr. W. E. Fothergill of Manchester has published a series of valuable papers on the therapeutical use of Senecio Jacobœa.

Dr. Le Mare Bunch has investigated its physiological action. Preparations made from the entire plant were employed. The effect of the drug on the heart was recorded by Schäfer's heart-levers, connected with the auricle and ventricle respectively, tracings being taken on smoked paper. The carotid pressure was recorded at the same time, the anæsthetic being varied in different experiments.

Intravenous injection of small quantities of an alcoholic solution caused a slight rise of general blood pressure, accom-

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panied by some diminution in the magnitude of both auricular and ventricular contractions, the diminution being, however, somewhat more marked in the case of the auricle. Such effects are not produced by alcohol alone of the same strength.

After several injections, or after one large dose, further injection of the alcoholic extract caused a fall of general blood pressure with slowing of the contractions of the heart, and increase in the excursions of the kymograph. This effect was repeated unless a considerable interval was allowed to elapse before more of the drug was injected, when a further small injection again caused some rise of general blood pressure. It appears, therefore, that there are contained in the entire plant two substances with distinct physiological actions, but how far these substances correspond with the alkaloids previously mentioned is doubtful.

Intravenous injection of a watery extract of the residue obtained by evaporating down the alcoholic solution, driving off all the alcohol, taking up in water and filtering, caused a marked fall of blood-pressure, with slowing both of the auricular and ventricular contractions, and sometimes irregularity, especially of the auricle. This fall of blood-pressure was followed by a slight rise, due to constriction of peripheral vessels, cardiac inhibition still causing some slowing of the heart-beats. This effect on the heart was not abolished by division of the vagi, but after the previous injection of a small dose of atropine (0·004 gramme for a dog of 7 kilos.), either in the same dog after a considerable interval, or in another dog, cardiac inhibition was not produced by further administration of the watery extract. As the action of atropine is on the cardiac nerve endings, these experiments show that the cardiac action of the drug is directed to the nerve terminations in the heart, and is not due to direct action on the muscular fibres of that organ.

The paper is illustrated by a number of tracings, many of which are printed upside down.

Dr. Bunch arrives at the following conclusions :—

1. Injections of an alcoholic extract of the entire plant of Senecio jacobœa into the circulation of a dog in small doses cause a rise of blood pressure, with constriction of peripheral vessels and of vessels of the intestinal area. This effect is

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accompanied by a diminution in the magnitude of the contractions both of the auricle and of the ventricle.

2. Large doses (0·8 to 1·0 gramme for a dog of 7 kilos.) of the drug cause a fall of general blood pressure, with dilatation of the intestinal vessels and inhibition of the contractions of the intestinal coat.

3. After several injections of small doses, or after one large dose of the alcoholic extract, further injections produce a fall of blood pressure, with slowing of the heart, and this effect is repeated unless a considerable interval is allowed to elapse before any further injection of the drug, which then again causes some rise of general blood pressure.

4. The entire plant, therefore, contains two substances with distinct physiological actions.

5. Watery extracts of the residue obtained by evaporating the alcoholic solution produce a fall of blood pressure and cardiac inhibition, due to the action of the drug on the nerve terminations in the heart, and not to direct action on the muscular fibres of that organ.

6. The substance which causes a rise of blood pressure is not contained in such watery extracts, or, if present, is only in small quantities.

Senecio is of very little value in cases of amenorrhœa due to anæmia. When the normal condition of the blood has been restored by the administration of iron, tincture of Senecio Jacobœa may be given with advantage. It is a 1 in 10 preparation, and is made with proof spirit. The dose is from one to two drachms three times a day, and it should be given for some days before the expected period. It is conveniently given in the form of a mixture flavoured with spirit of chloroform and syrup of lemons.

Senecio and Senecin are now extensively used, and have been selected as a subject for report by the Therapeutical Committee of the British Medical Association.

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THE SURGICAL TREATMENT OF PARALYSIS BY TENDON-TRANSPLANTATION AND ARTHRODESIS.

By A. H. TUBBY, M.S., F.R.C.S.

Many cases of deformity from infantile paralysis and spastic paralysis may be treated by tenotomy and instruments, but the objects of the comparatively new methods of tendon-transplantation and arthrodesis are not only to overcome the deformity satisfactorily, but to render the patient, as far as possible, independent of the instrument maker. Infantile paralysis has the special characteristic of a selective action upon muscles; for it picks out individual fibres of muscle, affects one muscle or a group of muscles, or leaves intact a single muscle in a limb. The best example of the last-named condition is the retention of power in the psoas muscle when the whole lower extremity is affected by infantile paralysis. Tendon-transplantation is particularly adapted to those cases in which certain muscles, or groups of muscles, are affected while their opponents remain intact. The procedure has been variously described by the titles of muscle-grafting; functional transference of muscle; and tendon-reinforcement; but the word tendon-transplantation sufficiently indicates the scope of the operation, the credit of which belongs originally to Nicoladoni; who, in 1882, in a case of paralytic talipes calcaneus, attached the peronei to the tendo Achillis with a satisfactory result. For some years his example was not followed, but in 1898, Drobnik analysed and published a series of cases, sixteen in all, and the writer has, himself, operated upon over thirty.

There are some points which should be observed, and

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certain precautions taken, before deciding to perform tendon-transplantation. These are as follows: The muscles should be tested electrically, and the relative strength of each of them determined. The contraction of the sole of the foot, due to the plantar fascia, should have been previously removed by operation. In selecting a healthy muscle to reinforce a paralysed muscle it is advisable that the one selected should be near the paralysed one, thereby saving unnecessary disturbance of the parts. For instance, in reinforcing the tendo Achillis for talipes calcaneus, the peronei and the flexor longus pollicis may be used. The grafting tendon should be carried as directly as possible to the paralysed muscle, and not bent round at an angle, for this has the effect of considerably lessening the transference of power. The operation is not called for when one muscle only is paralysed, nor should it be practised when a flail-like joint exists. The latter class of cases is only suitable for arthrodesis.

We will now proceed to discuss individual examples of paralysis of the foot and knee in which tendon-transplantation is an appropriate measure. So far, the form of paralysis which has given the best results has been talipes calcaneus, when the peroneus longus, and flexor longus pollicis, have been inserted into the tendo Achillis. The value of this procedure is enhanced by the fact that most attempts to shorten an elongated tendo Achillis have resulted in failure. The opposite condition of talipes equinus does not require tendon-transplantation because section of the tendo Achillis suffices to overcome the deformity. Cases of paralytic valgus due to loss of power in the tibialis anticus and posticus may be treated in one of the following ways: A strip may be split from the tendo Achillis, with a portion of the muscular fibres of the gastrocnemius attached, and used to reinforce the tibialis posticus; or the tendon of the extensor proprius pollicis may be attached to the tibialis anticus, and the flexor longus digitorum to the tibialis posticus. In severe cases of paralytic valgus, the peroneus longus tendon may be divided and brought across the front of the extensor tendons, and then stitched to the tibialis anticus. The employment of the peroneus longus in this connection exemplifies an important point, namely, that by selecting one of the opponents of a paralysed muscle, we not only weaken the power of the

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opponents, but transfer such wasted power to those muscles in need of reinforcement. Paralytic varus, due to loss of action of the peronei, is treated by transferring a strip of the gastrocnemius and tendo Achillis to the peroneus longus. In the compound varieties of the deformity considerable ingenuity must be exercised in determining which muscles shall be used for grafting. Taking the case of paralytic calcaneo-valgus, the peroneus longus is used to supplant the tendo Achillis, and a strip of the extensor longus digitorum to reinforce the tibialis anticus, while a portion of the flexor longus digitorum strengthens the tibialis posticus. In paralytic equino-varus the following plan is useful: A long incision is made on the posterior aspect of the leg at its outer part; the tendo Achillis is split lengthwise so far as the point where the two heads of the gastrocnemius meet, and the strip is attached to the distal part of the divided peroneus longus. The remaining portion of the tendo Achillis is severed with a tenotome. The foot comes at once into position and the result is extremely good.

As to the actual method of operating, success or failure depends upon healing by primary union, and this can only be obtained by rigid asepsis. A long incision is made over the tendons which are to be exposed, and their sheaths are freely opened in such a way that the tendon of the re-inforcing muscle can be easily applied to the paralysed muscle. This is done in the following manner: If it be desired to attach the peroneus longus tendon to the tendo Achillis, the latter is split longitudinally opposite the ankle joint and the former is severed at a corresponding point. The proximal end of the peroneus longus is passed to the under surface of the tendo Achillis and drawn through the longitudinal slit above-mentioned; and it is then split and the two ends are quilted down by sutures to the superficial aspect of the tendo Achillis. The best material for suture is undoubtedly Chinese silk which has only been boiled once, and that for the purposes of the operation. It is strong and not too bulky, and if properly sterilised does not give rise to any suppuration. Other surgeons have employed kangaroo tendon and catgut, but the writer has known trouble to follow from them, so that he adheres firmly to the use of silk sutures. It is not always necessary to pass the re-inforcing tendon through the paralysed one, but the former may be attached alongside

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the latter, the adjacent edges having been previously freshened. One point deserves important consideration in this operation. The proximal portion of the tendon of the healthy muscle should be pulled on firmly and should be inserted at such a point in the tendon of a paralysed muscle that the re-inforcing tendon when it is fixed is at its utmost possible tension.

So much for tendon-transplantation in cases of talipes. There are other possibilities. It has been observed that when paralysis of the extensor quadriceps occurs, the sartorius frequently escapes. Then the tendon of the latter may be fixed into the front of the patella and made to act as a direct extensor of the leg. When infantile paralysis of the hand is present there is almost unlimited scope in tendon-transference from healthy muscles of the wrist to paralysed ones.

Arthrodesis.—The object of this operation is to secure ankylosis in a flail-like but otherwise healthy joint. It has been practised on the knee and ankle but is undoubtedly better adapted for the latter than the former, because a permanently straight limb due to ankylosis at the knee-joint is more trouble to its possessor than one controlled by instruments where flexion and extension can be obtained by the use of a simple ring-catch joint. If it be decided to operate upon the ankle, *e.g.*, in a case of severe talipes calcaneus, the joint is reached either by an anterior incision across the front or by a horseshoe-shaped flap behind with the convexity downwards. The latter incision has the advantage of giving the opportunity of shortening the tendo Achillis at the same time. On the whole the anterior incision is to be preferred as the more convenient. Before dividing the extensor tendons a strand of silk should be passed through each of them above and below the point of severance, thus obviating difficulty when they retract into their sheaths on division. The section of the anterior tibial artery and nerve gives rise to no trouble. The artery is ligatured and the nerve reunites if the soft parts are carefully adjusted. After opening the joint all cartilage and synovial membrane are carefully removed, the bone is stippled and gouged to make a rough surface, the parts are carefully sewn up, and the ankle put up at a right angle. It is rare to obtain firm bony ankylosis, but close fibrous ankylosis, allowing five to ten degrees of movement of the ankle, follows. This is enough to allow of ease in progression combined with

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efficient fixation. In operating upon the knee it is desirable to retain the patella. The best method, in the writer's opinion, is to saw the patella across, turn the ends up and down, and remove its posterior cartilaginous surface. The adjacent articular surfaces of the tibia and femur are then freshened, and the anterior articular aspects of those bones cut square to fit the posterior aspect of the patella. The two parts of the patella are then wired together and pegged on to the anterior surfaces of the tibia and femur. One great objection to arthrodesis at the knee is the fragility of bones in paralysed limbs and the consequent liability to fracture. This is all the more likely to occur when the tibia and femur are welded into one bone; so that, if possible, tendon-transplantation should be preferred. By a judicious employment of tendon-transplantation and arthrodesis many distressing deformities can be relieved, power restored to an otherwise useless limb, and the employment of cumbersome apparatus avoided.

The Surgical Treatment of Spastic Paralysis.—It often happens that a child of nine or ten years of age, of fairly intellectual development, presents the following physical aspect. He is entirely unable to walk owing to distortion in the legs. The feet are in a position of talipes equinus or equino-varus; the knees are flexed, and the hamstrings tightly contracted; the thighs are flexed and adducted with contraction of the sartorius ilio-tibial bands and adductors. When the spastic process has ceased, and it is evident that the condition is one of contracture following disuse and perverted attempts at locomotion, surgical methods are called for, and the writer believes that the justification is as follows:—when the immediate effect of the cerebral nervous lesion has subsided, the spinal cord remains in a state of excessive reflex excitability. Tightly contracted muscles and tendons augment this condition and induce further contraction. Further, so long as the opponents of the contracted muscles are in conditions of elongation and disuse they become steadily weaker. If the tendons of the contractured muscles be divided much of the reflex spasm ceases, the limb assumes its proper position, the tension of the weaker muscles is relaxed, they regain power, and the patient is able to walk.

In such a case as has been pictured, treatment should commence at the hips by division of the contracted tendons in that

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region, and the remaining flexion at the hip-joint, due to contraction of the capsular ligament, should be overcome by weight-extension. The hamstrings may then be divided, and the contraction of the posterior ligament of the knee reduced by weight-extension. At a further sitting, the deformities of the foot are rectified by tenotomy, and the limb is put up in plaster of Paris to the middle of the thigh for about six weeks. All then that is required is a suitable retentive apparatus to enable the patient to walk.

Cases of contraction of the upper extremity are more difficult to treat. The limb is found in the following position: the elbow is flexed; the forearm pronated; the wrist contracted; the fingers flexed; the thumb adducted and bent into the palm. The writer has elsewhere described a successful method of dealing with these cases, which consists in detaching the pronator radii teres from its insertion into the radius, carrying it through the interosseus membrane and around the posterior aspect of the bone, and then refixing it just above to its former attachment. By this means it becomes a supinator instead of a pronator. Then by tenotomies at the wrist and elbow the flexion deformities are readily reduced.

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A CASE OF POLYPOID FIBROMA OF THE PYLORUS SUCCESSFULLY REMOVED BY OPERATION.

By JAMES SWAIN, M.S., M.D.Lond., F.R.C.S.Eng.,

Professor of Surgery at University College, Bristol;
Assistant-Surgeon to the Bristol Royal Infirmary.

Non-malignant tumours of the pylorus have not received much attention, partly because of their rarity, and partly because, when they are large enough to give rise to symptoms, they are accompanied by clinical phenomena which resemble those produced by other more common causes of pyloric obstruction and its resulting gastrectasis.

The following notes should have more than a passing interest, and their consideration clearly shows the desirability of adopting an exploratory cœliotomy in cases in which the diagnosis is doubtful, either as to the nature or position of the tumour.

L. W., female, aged 28 years, was sent to me by Dr. Ballance of Weston-super-Mare. She had been married four years, and had had one child (three years old), and two miscarriages. Though never robust she had had no serious illness except a severe attack of influenza three years ago. She had suffered from "indigestion" since fifteen or sixteen years of age; this had shown itself by pain in the pit of the stomach and vomiting after meals. Once—about eight years ago—she had "ulcer of the stomach," but did not vomit blood, though she stated that she passed some with the motions. The patient was in her usual state of health till about a month before I saw her, but during the past four weeks she had suffered considerably from flatulence and unpleasant eructations, and had noticed a hard lump in the abdomen about as large as a hen's egg. There had been no pain. When first noticed the lump was on the

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right side of the abdomen just below the level of the navel, but it afterwards "moved upwards" and nearer the middle line.

For a fortnight she continued in much the same condition, but she wasted rapidly and felt ill and weak. During this time she took her food as usual, and there was no vomiting; but, a fortnight before she came under my observation, vomiting set in somewhat profusely, and had continued with intermissions ever since.

At the time of examination there was considerable emaciation. Situated in the right umbilical region was a slight bulging—more evident in deep inspiration—caused by a firm irregularly-shaped tumour, with nodular surface, nearly as large as the closed fist. The tumour, though usually found to the right of the umbilicus, could easily be moved completely to the left of that spot, and was occasionally found in other positions (right hypochondrium, &c.). With respiration the growth moved downwards some two inches and could be similarly displaced by manipulation, but its downward displacement seemed to be limited by an attachment above. Apart from this attachment its mobility was very free. During its descent in deep respiration a wave extending transversely across the abdomen seemed to travel downwards with it. There was no tenderness. Over the tumour there was resonance on percussion, and gurgling and splashing sounds could be felt and heard in the neighbourhood. No distinct dilatation of the stomach could be made out, and by auscultatory percussion no definite connection between the tumour and the stomach was detected. An examination of the vomited matters gave a negative reaction to Günzburg's test, but lactic acid was found to be present. An incision about four inches long was made in the median line; about two-thirds of the incision being above, and about one-third below, the umbilicus. On opening the peritoneum the tumour was found to be inside the stomach, in which it was freely movable except for a fixed point near the pylorus. The stomach (pyloric end) and adjacent part of the duodenum were brought out through the parietal wound and surrounded by sponge cloths. An incision about three inches long was then made in the anterior wall of the stomach. This incision was in the long axis of the stomach, midway between

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its upper and lower borders and extended beyond the pylorus into the duodenum. The tumour was seen to be attached to the posterior part of the pylorus by a thick pedicle about one and a half inches in diameter. The body of the tumour hung down in front of the pyloric orifice and evidently acted like a ball valve. The weight of the tumour had caused invagination of the adjacent parts of the stomach and duodenum. The stomach, which was dilated and contained a dark brownish-black fluid, was washed out with boracic lotion. The right end of the incision was then prolonged downwards, dividing the anterior-inferior aspect of the gastro-duodenal junction, and then made to encircle the tumour at a distance of about half an inch all round its base of attachment. The whole incision was, therefore, more or less racket-shaped, with the large end bent at an acute angle. The growth was cut away by dividing all the coats of the invaginated portions of the stomach and duodenum. The result of this was that the stomach and duodenum were attached by the upper and anterior parts of the pylorus only. The duodenum was then attached to the stomach by uniting the mucous membrane on either side of the incision by a continuous catgut suture, occasionally interrupted by a knot for greater security. That part of the incision which was first made in the anterior wall of the stomach was similarly closed as to its mucous membrane by a continuous catgut stitch. The junction between the stomach and duodenum and that part of the incision which was in the anterior wall of the stomach which had thus been united by their mucous surfaces were then closed on their peritoneal aspect by numerous silk "quilt-sutures" (Halsted's), which took up the peritoneal, muscular and submucous tissues. These sutures were inserted on the posterior aspect by tearing through the lesser omentum and so bringing the posterior gastro-duodenal aspect within sight—peritoneal folds between the gall bladder, colon and great omentum preventing an easy access from below. The parietal wound was closed, without drainage, by interrupted sutures of silkworm gut. (At the time of operation a cicatrized ulcer, one-third of an inch in diameter, was noticed on that part of the pylorus which was left undivided).

The condition after operation may be briefly given:—

First day: Patient has been fed solely by nutrient enemata.

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During the night she vomited about a drachm of watery fluid. T. 99°. Allowed to wash the mouth out with lemon water. Has passed eleven ounces of urine since operation.

Second day: Had cramping pains in stomach last night. Still fed by rectal enemata. T. 100·6°. Pulse firm, hundred per minute. No distension or tenderness of the abdomen. Has passed twenty-one ounces of urine during the past twenty-four hours. No vomiting.

Third day: Bowels acted for first time since operation; there was no sign of blood in the motions. Slight metrostaxis commenced in the night. No distension of abdomen. Pulse good. T. 98·8°. Has passed twenty-eight ounces of urine since yesterday. Nutrient enemata to be continued, but patient was ordered two ounces of peptonised milk every two hours by the mouth.

Fourth day: Taking three ounces of food every two hours—the diet consisting of water-gruel, tea, peptonised milk, beef essence, &c. Has passed fifty-five ounces of urine since yesterday. General condition excellent.

Fifth day: Taking four ounces of food every two hours if awake. Temperature continues normal. Urine, fifty-six ounces.

Sixth day: Bread and butter added to the diet. Nutrient enemata still continued.

Seventh day: Wound dressed—looks healthy. Diet increased in quantity.

Ninth day: Taking about ten ounces of liquid food every four hours in addition to fish and bread and butter. Nutrient enemata gradually being stopped. Passes sixty to seventy ounces of urine daily.

Eleventh day: Chicken added to diet.

Eighteenth day: Wound soundly healed, all stitches removed. The nutrient enemata have been stopped for some days and patient is eating an ordinary diet.

Twenty-fifth day: Allowed to get about with a belt and pad to support the cicatrix. Has gained flesh and feels very well.

Examination of the tumour: The mass removed weighed four and three quarter ounces. The tumour sprang from a portion of the pylorus, and the adjacent parts of the stomach and duodenum had been drawn inwards so that there was a cone-shaped recess covered by peritoneum at the base of the

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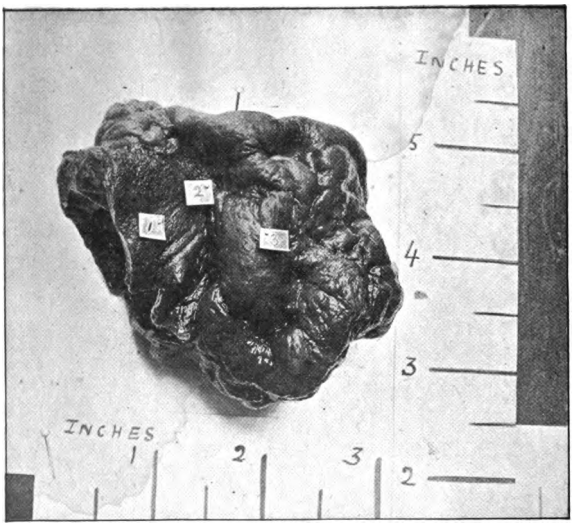

Fig. I.

ANTERIOR AND RIGHT SURFACE.

1. Duodenum. 2. Pylorus. 3. Tumour.

To the left of 1 is the cavity caused by the dragging of the growth on the parts of the stomach and duodenum adjacent to the pyloric attachment of the tumour.

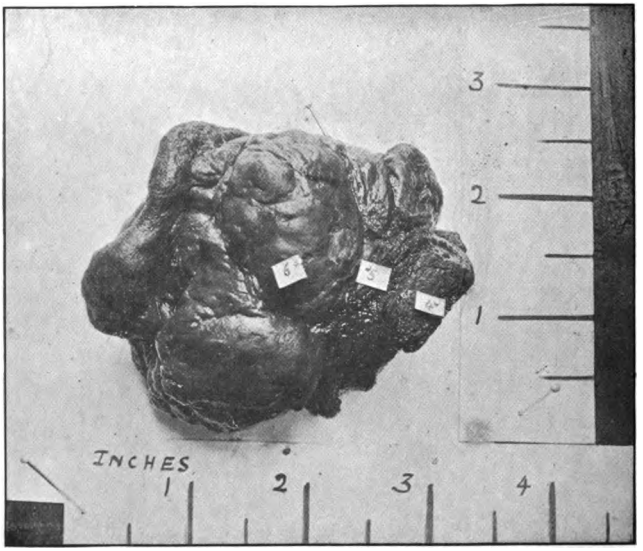

Fig. II.

POSTERIOR AND LEFT SURFACE.

4. Stomach. 5. Pylorus. 6. Tumour.

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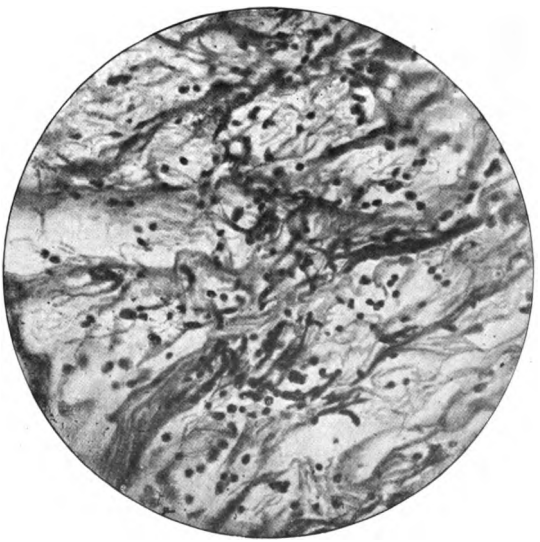

Fig. III.

MICROSCOPIC SECTION.

Smith and Beck's $\frac{1}{5}$-in. lens ; No. 1 eye-piece.

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tumour (Fig. I.). The tumour itself had an irregular shape and surface, and measured about three and a half inches by two and a half inches by two inches (Figs. I. and II.). It was covered with a reddish-grey mucous membrane, but the mucous surface of the invaginated parts of the stomach and duodenum around its base was congested and of a purplish-red colour. It cut with a firm section and the internal aspect was smooth, somewhat translucent, and almost white in colour. Microscopical examination showed it to be composed of bundles of fibrous tissue with a loose cellular tissue (Fig. III.). Here and there the section was myxomatous in appearance. The mucous membrane covering the tumour was lined with columnar epithelium.

The great mobility of benign tumours of the pylorus is a property shared with new growths of the omentum and small intestine, and though the symptoms of pyloric obstruction with splashing and gurgling sounds pointed to an affection of the pyloric end of the stomach, the actual diagnosis was not made until after the abdomen had been opened. I have not formed a high opinion of the value of the presence or absence of hydrochloric acid in differentiating between benign and maligant affections of the stomach, and the negative result of Günzburg's test in this case of benign tumour is not an isolated instance in my experience of its failure to help in the diagnosis. As regards the method of uniting the duodenum to the stomach, I adopted direct suture because I always prefer it, whenever possible, to instrumental aid; and the quilt-suture which was used is both speedy and reliable.

The case is one of great interest, and I should, in future, regard the existence of a freely mobile tumour associated with symptoms of pyloric obstruction in a young adult as suggestive of this rare form of disease.

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TWO CASES OF PROLAPSE OF THE RECTUM TREATED BY EXCISION.

By E. PERCY PATON, M.S., F.R.C.S.

Two cases of extensive prolapse of the rectum having been under my care during the past year, both of which have been treated with complete success by excision of the prolapsed gut, I have thought that the notes of these cases might be of interest.

I first saw Mrs. E. V. in November, 1899; she was 42 years of age, had had two children, the youngest of which was six years old. Since its birth she had suffered from rectal prolapse, with some prolapse of the uterus. She was quite unable to hold her motions, and was in constant trouble in consequence, especially when walking about, when the prolapse came down considerably. On examination there was a very considerable rectal prolapse about half the size of the fist, which greatly increased on straining. The posterior vaginal wall also came down; but the uterus did not come outside the vulva.

In Nov., 1899, the patient was anæsthetised, and two or three inches of the rectal mucous membrane were removed after Whitehead's method. Owing to its congested condition there was very considerable bleeding; but the wound healed rapidly, and she went home on Dec. 14th, with instructions to lay up and return in fourteen days. This she did not do; but on Dec. 30th she had a very early abortion, which laid her up for ten days.

She returned again on April 24th, 1900. The prolapse was better than before, but still considerable. On April 26th she was etherised, and the following operation done: the prolapse was induced to come down as far as possible; the prolapsed

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part was then nearly as large as one's fist. This mass was now cut off flush with the skin of the anus. In this procedure it was first necessary to strip up some of the posterior vaginal wall to prevent its being opened; it was then found that a pouch of peritoneum was included in the mass, and extended for two-thirds round the circumference of the gut on its anterior and lateral aspects; this pouch was cut off and the *cul-de-sac* reclosed by fine silk sutures. The excision was then completed, and the margins of the gut were stitched to the edge of the anus, except posteriorly, where the skin opening was first narrowed by a suture or two before being united to the gut, the space behind the bowel having a small gauze plug inserted into it.

The operation caused very little inconvenience; the temperature only reached 101°, and the bowels were opened by aperients and an enema on the third day without any trouble; there was a little suppuration about the posterior part of the wound, but this very soon subsided, and she returned home on May 19th. She has been seen several times since then, but there has been no return of the prolapse. Her only difficulty now is that when the bowels are loose she has not good control over her motions.

The second case was as follows: E. B., a single woman, aged 28, a general servant, was seen first on June 2nd. She said she had been suffering from rectal prolapse for about three or four years, and this was now so troublesome that it prevented her following her occupation. On examination an inch or two of the rectum came down with practically no straining, and she said this was always more or less down when she was walking about. The sphincter was practically non-existent, and the parts were so lax that it seemed as if there would be no difficulty in passing the whole hand into the rectum. On June 5th several linear cauterizations were made, after which the bowels were opened on the fourth day. The eschars soon separated, but when the ulcers were healed it was found that the prolapse was practically unimproved. So on June 29th an exactly similar operation was performed to that on the first case, the parts, as to vaginal wall and peritoneum, bearing practically exactly the same relations as before. The subsequent history of the case was uneventful: the bowels were opened on the

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sixth day, rather later than was intended, and the temperature was rather irregular until then; there was also rather more suppuration from the posterior part of the wound; but the patient went out well on August 13th. She has been seen since, and has no prolapse; and some contraction of the wound has given her complete control over her motions, unless they are very loose.

These two cases shew how very little risk attaches to opening the peritoneum, even in connection with rectal operations, if ordinary care be taken. The disadvantage of operation on severe and long-standing cases of prolapse is that after treatment rectal control is not necessarily restored, owing to the great stretching which the sphincter has undergone, preventing its recovery even when the prolapse is cured; also no doubt due to the fact that the operation itself sometimes destroys what remains of the sphincter. In some cases, however, control to a considerable extent returns in course of time. In order, however, to prevent the oncoming of incontinence, cases of prolapse of the rectum should be operated on early, before the sphincter is stretched beyond recovery. The fact of the safety of the operation is an additional reason for urging this.

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CASE OF ULCERATIVE COLITIS.

By R. G. HEBB.

The value of employing the serum test is well illustrated by the negative reaction in the following case.

J. C., aged 38 years, a cab-driver, was admitted into St. Luke Ward on September the 13th, 1900, for high temperature and also for a large hernia, with which he had been affected for seven years. During this period there had been no trouble with the rupture, but on September the 8th the hernia came down again. He now began to feel out of sorts. On the 11th diarrhœa set in, and on the 13th he came to the hospital complaining of feeling ill, and of the rupture. He was admitted to the surgical ward, where he remained for six days, and on the 19th of September was transferred to my care in Bouverie Ward. During his stay in the surgical ward he was not found to present any symptoms that could be referred to the rupture, but there were fever of a continuous type (101°–103°) and looseness of the bowels, the stools being liquid, dark, and very offensive. The pulse and respiration were increased in frequency (P. 96–104; R. 32–48), but nothing strikingly abnormal was discovered in the thorax. The urine was alkalin in reaction, Sp. Gr. 1030, contained urates but no sugar or albumen. From the foregoing symptoms it was concluded that the patient might be suffering from enteric fever. On admission to Bouverie Ward the clerk ascertained the additional, and indeed usual information, that the patient had suffered from "gonorrhœa, that he drank four pints of beer per diem, and three stiff glasses of whisky a night."

From the notes it may also be gathered that the patient was a big burly man, with large chest and much swollen abdomen.

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His face was of a dusky hue. The respirations were hurried and the pulse increased in frequency.

On examination of the thorax the heart sounds were found to be distant but normal. The breathing was harsh and there were numerous rhonchi and sibili, and some coarse crepitations.

The abdomen was much distended, the girth at the umbilicus measuring forty-six inches; except in the flanks it was tympanitic all over; there was no tenderness.

The skin was moist and no rash or eruption of any kind was observed. The tongue was dry and brown, but showed streaks of white fur.

The stools were typhoid-like as to consistence, were sometimes light brown, sometimes dark brown, once contained a small quantity of blood and always were extremely offensive. There were twenty-eight motions in the thirteen days.

The urine was faintly acid, Sp. Gr. 1027, and showed a trace of albumen.

On the 20th September the pathologist reported that the Widal reaction was not present.

The temperature continued to range from 101°–103° till the 22nd, when it rose and remained till the end at from 102°–104°. The respirations were from 36–42; the breathing was difficult and thoracic, owing to the pressure on the diaphragm by the distended stomach and intestines. The pulse increased in frequency, 160, becoming feeble and running, though it remained fairly regular.

During the last two days there was some tenderness of the abdomen, for, though but partly conscious, he resented pressure. While in the medical ward his intelligence was always cloudy, he frequently wandered, and was delirious at night.

During the last twenty-four hours the patient became very restless, and was continually trying to get out of bed.

Died 5.30 p.m. September 25th.

The principal facts disclosed by the post-mortem examination were the following:—Body large and fat; left inguinal hernia. Chronic pleuritis, emphysema, bronchitis. Heart, kidneys, liver and spleen, not specially noteworthy. Abdomen much distended; gas and fæces free in peritoneal sac; some recent peritonitis. Stomach and small intestine nil. The large intestine as far as the sigmoid is enormously distended, and this

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portion exhibits the appearance typical of ulcerative colitis. There are numerous perforations and holes, the gut being ragged and the mucosa in shreds and necrotic in places. The sigmoid is incarcerated in the hernial sac, but its mucosa and that of the rectum are fairly normal.

In this instance a positive diagnosis of ulcerative colitis was made on the 20th, the day after the reception of the patient into the medical ward. The chief grounds for the diagnosis were the absence of the Widal reaction; the extraordinary distension with tympanites of the abdomen; the absence of abdominal tenderness, of enlarged spleen and of spots, and the fact that the stools were fluid, often dark brown and always extremely offensive. Of these points I am inclined to attach most importance to the first and the last, and when all were taken together, it was rendered fairly certain that the case was not typhoid, and that it was an ulcerative condition of the colon. One factor in the diagnosis was neglected, and that a most important one, namely, a search for sloughs or pieces of necrotic mucosa in the stools. When a careful, diligent, and routine examination of stools is made in every hospital, the millennium of medicine will arrive.

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MEDICAL REGISTRAR'S REPORT FOR THE YEAR 1899.

Number of Patients in Medical Wards, on Dec 31st, 1898 ...		61
Admitted to Medical Wards in 1899		669
Total		730
Of these—		
Males	374	
Females	356	
Recovered or relieved		458
Males	220	
Females	238	
Unrelieved, including those transferred to Surgical Wards or Fever Hospital	101	
Males	61	
Females	40	
Died	109	
Males	59	
Females	50	
Number remaining in Medical Wards on Dec. 31st, 1899 ...		62

Average stay in hospital of each patient ... 25.7 days.
Mortality during the year ... ... 14.93 per cent.

BERTRAM ABRAHAMS, M.B., B.Sc., M.R.C.P.
Medical Registrar.

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Table A.

Disease	Jan. to March	April to June.	July to Sept.	Oct. to Dec.	Sex. Males.	Females.	Total.	Age. Under 5 yrs	5–10	10–20.	20–30.	30–40.	40–50.	50–60.	Over 60.	Result. Died. M	Died. F	Unrelieved. M	Unrelieved. F	Relieved. M	Relieved. F
General Diseases:																					
Group A:																					
Enteric fever	14	1			7	8	15	1	4	6	2	2				4	2			3	6
Scarlet fever		2			2		2		1	1								1		1	
Diphtheria	1	3			1	3	4	2		1	1						2			1	1
Influenza	6	3		4	3	10	13			8	1		2	1	1					3	10
Erysipelas		5		1	3	3	6	1		1	1	1	1			1				2	3
Whooping-cough		1		1		2	2	2													2
Röthein		1			1		1		1											1	
Group B:																					
Poisoning: alcoholic	2	1		3	5	1	6					3	1	1						5	1
„ opium				1	1		1	1												1	
„ ptomaine	1				1		1				1									1	
„ nitric acid				1	1		1						1			1					
Group C:																					
Marasmus	3			1	1	3	4	3		1							2			1	1
Syphilis: congenital				1	1		1	1												1	
„ acquired	1				1		1					1								1	
Tuberculosis	2	4	1		1	6	7	4	2			1				1	3		3		
Rheumatism: acute	10	7		1	13	5	18		2	6	7	2	1							13	5
„ sub-acute	6	7	2	1	4	12	16		1	2	5	3	4	1					1	4	11
„ gonorrhœal	1				1		1					1						1			
Osteo-arthritis	2	2			2	2	4					2		2						2	2
Gout	1	1			1	1	2						1	1						1	1
Rickets	2				1	1	2	1	1										1	1	
Infantile scurvy	1					1	1	1													1
Hæmophilia		1			1		1			1										1	
Anæmia	7			5	1	11	12			6	5		1							1	11
Leucocythæmia		1			1		1						1							1	
Diabetes mellitus	1	4		1	5	1	6					1	1	1	3	1		3		1	1
Diseases of the Nervous System:																					
Brain:																					
Hemiplegia	2	2	1	1	3	3	6				1	2		2	1			3	1		2
Cerebral hæmorrhage	1	1		1	2	1	3				1	1		1		2					1
„ softening	1					1	1						1				1				
„ tumour	1	2		1	1	3	4	1			2	1					1	1	1		1
Meningitis		2				2	2	2									2				
Epilepsy		1				1	1					1									1
Jacksonian epilepsy	1				1		1						1							1	
Chorea	9	7		3	6	13	19		9	10							1			5	13
Convulsions	1					1	1			1											1
Paralysis agitans		1			1		1							1				1			

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TABLE A—*continued.*

DISEASE.	Jan. to March.	April to June.	July to Sept.	Oct. to Dec.	Sex. Males.	Females.	Total.	Age. Under 5 yrs.	5–10.	10–20.	20–30.	30–40.	40–50.	50–60.	Over 60.	Result. Died. M	Died. F	Unrelieved. M	Unrelieved. F	Relieved. M	Relieved. F
DISEASES OF THE NERVOUS SYSTEM—*continued.*																					
Tetany	...	1	...	...	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1
Idiocy	2	...	...	...	1	1	2	2	...	...	...	...	...	...	...	...	...	1	1	...	...
Cerebellar ataxy	...	...	...	1	1	...	1	...	...	...	1	...	...	...	...	...	...	1	...	...	...
Cord:																					
Tabes	1	1	...	1	3	...	3	...	...	...	...	2	...	1	...	...	...	2	...	1	...
Disseminated sclerosis	2	1	...	...	2	1	3	...	...	...	1	...	1	1	...	...	...	2	1	...	...
Spastic paraplegia	...	...	...	1	1	...	1	...	...	...	1	...	...	...	...	...	...	1	...	...	...
Peripheral Nerves:																					
Multiple neuritis:																					
alcoholic	2	1	...	1	2	2	4	...	...	...	...	3	...	1	...	...	...	...	...	2	2
diphtherial	2	...	1	1	3	1	4	1	1	1	1	...	...	...	...	1	...	...	...	2	1
saturnine	...	1	...	...	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...	1	...
Monoplegia	...	1	...	...	...	1	1	...	...	1	...	...	...	...	...	...	...	...	1	...	...
Ulnar neuritis	...	...	...	1	...	1	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...
Neuralgia	...	1	...	2	2	1	3	...	...	...	...	...	1	2	...	...	...	...	...	2	1
Sciatica	1	...	1	1	2	1	3	...	...	...	2	...	...	...	...	...	...	...	...	2	1
Cephalalgia	1	1	...	...	2	...	2	...	...	1	...	...	...	1	...	...	...	1	...	1	...
Lumbago	1	...	...	...	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...	1	...
VARIOUS:																					
Hysteria	4	...	...	4	3	5	8	...	1	1	3	2	1	...	...	...	...	1	1	2	4
Traumatic hysteria	1	...	...	...	1	...	1	...	...	...	...	...	...	1	...	...	...	1	...	...	...
Pseudo-hypertrophic paralysis	3	...	...	...	3	...	3	...	3	...	...	...	...	...	...	...	...	3	...	...	...
Neurasthenia	1	3	...	...	...	4	4	...	...	...	1	...	...	3	...	...	...	...	...	...	4
Perforating ulcer	...	1	...	...	1	...	1	...	...	...	...	...	1	...	...	...	...	1	...	...	...
DISEASES OF THE CIRCULATORY SYSTEM:																					
Infective endocarditis	1	1	...	...	...	2	2	...	...	...	2	...	...	...	...	...	2	...	...	...	...
Angina pectoris	...	1	...	...	1	...	1	...	...	...	...	...	1	...	...	1	...	...	...	...	...
Mitral stenosis	...	1	...	1	...	2	2	1	...	...	...	1	...	...	...	...	...	...	1	...	1
„ incompetence	6	4	1	2	8	5	13	...	2	3	1	4	1	2	...	3	2	...	...	5	3
„ double	8	4	1	5	4	14	18	...	1	6	4	7	...	...	...	1	4	...	...	3	10
Aortic stenosis	...	1	...	...	...	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	1
„ incompetence	2	...	1	...	2	1	3	...	...	...	1	1	1	...	...	1	...	...	...	1	1
„ double	4	4	...	1	7	2	9	...	...	1	2	4	2	...	...	1	1	1	...	5	1
Double aortic and double mitral	...	2	...	...	1	1	2	...	...	1	...	1	...	...	...	...	...	...	...	1	1
Cardiac failure	3	5	1	...	5	4	9	...	...	...	1	...	1	6	1	2	3	...	...	3	1
Pericarditis	1	...	...	1	1	1	2	...	...	...	1	1	...	...	...	...	1	...	...	1	...
Aneurysm, thoracic	1	1	1	...	3	...	3	...	...	...	...	...	...	3	...	1	...	2	...	...	...

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TABLE A—*continued.*

DISEASE.	Jan. to March.	April to June.	July to Sept.	Oct. to Dec.	Sex. Males.	Females.	Total.	Age. Under 5 yrs.	5—10.	10—20.	20—30.	30—40.	40—50.	50—60.	Over 60.	Result. Died. M	F	Unrelieved. M	F	Relieved. M	F
DISEASES OF THE CIRCULATORY SYSTEM—*continued.*																					
Aneurysm, abdominal	1	...	...	...	1	...	1	...	...	...	1	...	...	...	...	1	...	...	...	...	...
Venous thrombosis ...	1	...	...	...	...	1	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1
Obliterative arteritis...	1	...	...	...	1	...	1	...	...	...	1	...	...	...	...	...	...	...	...	1	...
Œdema (?angioneurotic)	...	...	...	1	...	1	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...
Raynaud's disease	1	1	...	...	1	1	2	...	...	...	1	1	...	...	...	...	...	...	...	1	1
DISEASES OF THE RESPIRATORY SYSTEM:																					
Acute laryngitis..	...	1	...	...	1	...	1	...	...	...	...	1	...	...	...	...	...	...	...	1	...
Laryngeal paralysis ...	...	...	1	...	...	...	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...
Bronchitis: acute	9	11	1	10	19	12	31	23	3	1	2	2	...	...	...	1	...	1	...	17	12
„ chronic ...	9	4	...	5	15	3	18	...	...	...	2	3	4	4	5	3	...	...	1	12	2
Pneumonia: lobar ...	7	9	...	3	13	6	19	6	2	2	5	3	1	...	...	3	3	...	...	10	3
„ lobular...	13	12	5	10	19	21	40	36	2	1	...	1	...	...	...	9	7	...	...	11	13
Phthisis	15	17	1	3	21	15	36	...	1	2	13	17	3	...	...	7	3	7	4	7	8
Emphysema	2	1	...	...	2	1	3	...	...	...	...	1	...	1	1	...	...	1	...	1	1
Asthma	1	...	...	...	...	1	1	...	...	...	...	...	1	...	...	...	...	...	...	...	1
Pleurisy: simple acute	2	2	2	...	3	3	6	...	...	...	2	1	2	1	...	...	...	1	3	2	
„ effusive	6	1	2	1	6	4	10	...	1	1	6	1	...	...	1	...	...	2	...	4	4
„ chronic	1	1	...	1	3	...	3	...	...	...	...	1	1	1	...	...	...	1	...	2	...
Empyema	3	6	2	1	10	2	12	3	3	3	1	2	...	...	...	1	1	2	1	7	...
Compressed lung	1	1	...	...	1	1	2	...	1	...	1	...	...	...	...	...	...	...	...	1	1
DISEASES OF THE DIGESTIVE SYSTEM:																					
A.																					
Adenoids.....	...	...	...	1	1	...	1	...	...	1	...	...	...	...	...	...	...	...	...	1	...
Alveolar abscess.....	...	1	...	...	1	...	1	...	...	...	...	1	...	...	...	...	...	...	...	1	...
Tonsillitis: follicular...	5	4	..	1	4	6	10	1	1	3	1	4	...	...	...	...	...	...	...	4	6
„ parenchymatous...	2	1	...	...	1	2	3	...	...	2	1	...	...	...	...	...	...	...	...	1	2
Œsophageal stricture	3	1	...	...	2	2	4	...	...	..	2	...	1	...	1	...	...	1	1	1	1
Gastralgia	...	1	...	2	1	2	3	...	...	..	1	1	...	...	...	...	...	...	...	1	2
Gastritis: acute.....	1	2	...	...	1	2	3	...	...	1	1	...	1	...	...	...	...	...	...	1	2
„ chronic.....	1	...	...	1	1	1	2	...	...	...	1	1	...	...	...	...	...	...	...	1	1
Gastric ulcer	9	12	1	...	3	19	22	...	...	5	10	6	1	...	...	...	...	2	2	1	17
„ carcinoma	...	2	1	...	3	...	3	...	...	...	...	...	1	1	1	2	...	1	...	...	...
„ dilatation	5	1	...	...	2	5	7	...	...	...	2	2	1	2	...	1	...	...	3	1	2
Dyspepsia	3	6	1	2	3	9	12	...	...	1	6	2	1	1	1	...	...	...	...	3	9
Hæmatemesis.....	...	...	...	1	1	..	1	...	...	...	...	...	1	...	...	...	...	...	...	1	...
Diarrhœa	3	4	...	...	5	2	7	3	2	...	1	1	...	...	...	...	...	1	...	4	2
Constipation	4	3	...	5	4	8	12	1	...	1	1	4	3	2	...	...	...	...	...	4	8
Appendicitis	2	1	...	...	3	..	3	...	...	1	2	...	...	...	...	1	...	1	...	1	...
Colic	...	...	1	1	1	1	2	...	...	...	1	...	1	...	...	...	...	...	1	1	...

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TABLE A—*continued.*

DISEASE.	Jan. to March.	April to June.	July to Sept.	Oct. to Dec.	Sex. Males.	Females.	Total.	Age. Under 5 yrs.	5—10.	10—20.	20—30.	30—40.	40—50.	50—60.	Over 60	Results. Died. M	F	Unrelieved. M	F	Relieved. M	F
DISEASES OF THE DIGESTIVE SYSTEM—*continued.*																					
A—*cont.*																					
Enteritis	1	3	2	...	2	4	6	5	1	...	...	...	...	...	...	2	2	...	1	...	1
Malignant disease of intestine	...	1	...	...	1	...	1	...	...	...	...	...	...	...	1	...	...	1	...	...	...
B.																					
Jaundice	2	2	...	1	2	3	5	1	1	...	1	1	1	...	...	...	...	...	1	2	2
Cirrhosis of liver	6	6	...	...	7	5	12	...	...	...	1	3	3	3	2	1	2	...	...	6	3
Hepatitis: acute	...	1	...	...	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...	1	...
„ chronic	1	...	1	1	3	...	3	...	...	...	...	1	2	...	...	2	...	...	...	1	...
Gall-stones	...	...	...	1	...	1	1	..	...	...	...	...	...	...	1	...	...	...	...	...	1
Malignant liver	1	...	...	...	1	...	1	...	...	...	...	...	...	...	1	1	..	...	...	...	...
Abscess of liver	...	1	...	...	1	...	1	...	...	...	...	...	...	1	...	1	...	...	...	...	...
Stenosis of bile-duct	...	1	...	...	...	1	1	...	...	...	...	...	...	...	1	...	1	...	...	...	...
Malignant disease of bile-duct	1	...	...	...	...	1	1	...	...	...	...	...	...	...	1	...	..	...	1	...	...
Malignant disease of pancreas	...	1	...	1	1	1	2	...	...	...	...	...	2	...	...	1	...	...	1	...	...
Tubercular peritonitis	4	3	...	...	4	3	7	...	...	3	3	1	...	...	...	...	...	2	...	2	3
Malignant disease of peritoneum	...	1	...	...	1	...	1	...	...	...	...	1	...	...	...	...	..	1	...	...	...
Ascites	1	...	...	...	1	...	1	...	...	...	...	1	...	...	...	...	...	...	...	1	...
Mesenteric cyst	...	1	...	...	...	1	1	...	...	...	...	...	...	1	...	...	...	...	1	...	...
DISEASES OF GLANDS:																					
Glands in neck	1	1	...	...	2	...	2	2	...	...	...	...	...	...	...	...	...	...	...	2	...
Cretinism	1	...	...	...	...	1	1	...	...	1	...	...	...	...	...	...	...	...	1	...	...
DISEASES OF THE URINARY SYSTEM:																					
Acute nephritis	2	2	...	...	2	2	4	...	2	...	1	1	...	...	...	...	1	...	...	2	1
Chronic Bright's	13	7	...	2	14	8	22	...	...	2	4	9	1	5	1	1	1	4	2	9	5
Granular kidney	...	1	...	2	...	3	3	...	...	...	...	...	1	...	2	...	2	...	...	...	1
Albuminuria	...	...	...	1	...	1	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1
Retention of urine	...	...	...	1	1	...	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...
Dysuria	...	1	...	...	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1
Hæmaturia	...	2	...	...	2	...	2	...	...	1	...	...	1	...	...	...	...	...	...	2	...
DISEASES OF THE SKIN:																					
Tinea tonsurans	...	...	2	...	2	...	2	..	1	1	...	...	...	...	...	...	...	...	...	2	...
Psoriasis	1	...	...	...	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	1	...
Impetigo Contagiosa	...	1	...	...	...	1	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1

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TABLE A—*continued.*

DISEASE.	Jan. to March.	April to June.	July to Sept.	Oct. to Dec.	Sex. Males.	Females.	Total.	Age. Under 5 yrs.	5 - 10.	10 - 20.	20 - 30.	30 - 40.	40 - 50.	50 - 60.	Over 60.	Result. Died. M	F	Unrelieved. M	F	Relieved. M	F
VARIOUS:																					
Nil		4		1	4	1	5	2			1		1	1				4	1		
Salpingitis	1	1				2	2					1	1						1		1
Menopause	1					1	1							1							1
Poisoned wound of foot		1				1	1					1									1
Otitis media	1					1	1						1								1
Hip-disease	2					2	2		1	1											2
Run over	1					1	1	1													1
Scald			1			1	1						1								1
Pelvic peritonitis		1				1	1						1						1		
Malignant disease of breast		1				1	1								1		1				

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SURGICAL REGISTRAR'S REPORT FOR THE YEAR, 1899.

By E. CANNY RYALL.

The total number of cases under treatment in the Surgical Wards during the past year was 1,029, viz.:—

	Males.	Females.	Total.
Remaining in Hospital, December 31st, 1898...	37	40	77
Admitted during the year 1899...	546	406	952
	583	446	1,029
Of these there were:—			
Discharged, cured, or relieved	530	391	921
Died	33	37	70
Transferred to Medical Wards	1	—	1
In hospital, December 31st, 1899	19	18	37
	583	446	1,029

The percentage of deaths during the year has been 6·8.

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Statistical Tables of Diseases, Injuries, and Operations, with a Table of Infectious Diseases admitted into or occurring in the Surgical Wards during 1899.

TABLE I.—DISEASES.

DISEASES.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
GENERAL DISEASES:														
Septicæmia	1	...	1	...	...	...	...	...	1	...	...	...	1	
Erysipelas	1	1	...	1	...	...	...	...	...	...	...	1	...	
Typhoid fever	2	2	...	...	...	2	...	...	...	...	...	2	...	
Acute rheumatism	1	...	1	...	...	...	...	...	1	...	...	1	...	
Achondroplasia	1	...	1	...	...	1	...	...	...	...	...	1	...	
Gangrene (direct traumatic)	1	1	...	...	...	1	...	...	...	...	...	1	...	
VENEREAL DISEASE:														
Syphilis, acquired	6	1	5	...	...	...	2	3	...	...	1	6	...	
Chancroids	2	2	...	...	...	...	2	...	...	...	...	2	...	
LOCAL DISEASES:														
Tumours:														
Epithelioma of—														
Lip	1	1	...	...	...	...	...	...	...	1	...	1	...	
Cheek	1	1	...	...	...	...	...	...	...	1	...	1	...	
Tongue	8	8	...	...	...	...	...	...	1	4	3	7	1	Died of septic pneumonia after excision.
Floor of mouth	1	1	...	...	...	...	...	...	...	1	...	1	...	
Pharynx	2	2	...	...	...	...	...	...	1	...	1	1	1	Died of septic pneumonia, no operation.
Œsophagus	3	3	...	...	...	...	...	...	...	2	1	1	2	One case died of septic pneumonia, the other of exhaustion following gastrostomy.
Bladder	1	...	1	...	...	...	...	...	...	...	1	1	...	
Forearm	1	1	...	...	...	...	...	...	...	...	1	1	...	
Cervical lymphatic glands (recurrent)	1	1	...	...	...	...	...	...	...	...	1	1	...	

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Rodent ulcer	3	3	...	...	...	1	...	...	...	1	1	3	...	
Carcinoma:														
Breast	12	...	12	...	...	...	...	2	6	1	3	12	...	
Stomach	2	1	1	...	...	...	...	...	...	1	1	1	1	Died of collapse following gastro-jejunostomy.
Colon	2	2	...	...	...	...	...	...	...	1	1	1	1	Colon short-circuited, died of shock.
Rectum	4	1	3	...	...	...	...	2	...	...	2	3	1	Died of peritonitis, no operation.
Liver	1	...	1	...	...	...	...	...	...	1	...	1	...	
Pancreas	2	...	...	...	...	...	...	...	2	...	...	1	1	Died of exhaustion after cholecystotomy.
Uterus	2	...	2	...	...	...	...	...	2	...	...	1	1	Died of shock following abdominal hysterectomy
Sarcoma:														
Skin	2	2	...	...	...	...	...	...	...	1	1	2	...	
Neck	1	...	1	...	...	...	...	...	...	1	...	1	...	
Tonsil	2	...	2	...	...	...	...	...	...	2	...	2	...	
Tibia	2	2	...	...	...	...	1	1	...	...	...	2	...	
Foot	1	1	...	...	...	...	...	1	...	...	...	1	...	
Testicle	2	2	...	...	...	...	1	...	...	...	1	...	2	Both cases died of exhaustion, with secondary deposits, no operation in either case.
Other Tumours:														
Fibroma	2	...	2	...	...	...	1	...	1	...	...	1	1	Died of peritonitis following operation; it was a fibroma of broad ligament.
Fibro-adenoma	5	...	5	...	...	...	2	2	1	...	...	5	...	
Adenoma	1	...	1	...	...	...	...	...	1	...	...	1	...	
Myxoma (polypi, nose)	1	...	1	...	...	1	...	...	...	...	...	1	...	
Papilloma	2	...	2	...	...	...	...	...	1	...	1	2	...	
Lipoma	6	1	5	...	...	1	2	2	...	...	1	6	...	
Myoma (Uterine)	1	...	1	...	...	...	...	...	1	...	...	1	...	
Angioma	5	1	4	3	...	...	1	...	1	...	...	5	...	
Cysts:														
Dermoid	4	1	3	...	...	1	3	...	...	...	...	4	...	
Sebaceous	1	1	...	...	...	...	...	...	1	...	...	1	...	
Serous	1	1	...	1	...	...	...	...	...	...	...	1	...	
Ovarian	10	...	10	...	...	...	2	1	2	4	1	9	1	Died of exhaustion following ovariotomy.

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TABLE I.—*continued.*

DISEASES.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
MALFORMATIONS AND DEFORMITIES:														
Hare lip	5	3	2	5	...	...	...	...	...	...	...	4	1	Died 3 weeks after operation of "fits."
Cleft palate	2	...	2	...	2	...	...	...	...	...	...	2	...	
Torticollis	1	...	1	...	...	1	...	...	...	...	...	1	...	
Supernumerary thumb	1	...	1	1	...	...	...	...	...	...	...	1	...	
Contracted hand	1	...	1	...	...	1	...	...	...	...	...	1	...	
,, arm	1	...	1	1	...	...	...	...	...	...	...	1	...	
Webbed toes	1	1	...	...	...	...	1	...	...	...	...	1	...	
Hammer toe	6	3	3	...	...	4	2	...	...	...	...	6	...	
Hallux valgus	2	1	1	...	...	...	1	1	...	...	...	2	...	
Flat foot	7	5	2	...	...	5	1	...	1	...	...	7	...	
Talipes.														
Equinus	1	...	1	1	...	...	...	...	...	...	...	1	...	
Calcaneus	1	...	1	...	1	...	...	...	...	...	...	1	...	
Deformed legs	2	...	2	...	1	...	1	...	...	...	...	2	...	
Bow legs	1	...	1	1	...	...	...	...	...	...	...	1	...	
Genu valgum	6	2	4	2	2	2	...	...	...	...	...	6	...	
Congenital dislocation of hip	5	...	5	...	5	...	...	...	...	...	...	5	...	
Lateral curvature of spine	3	...	3	...	...	2	1	...	...	...	...	3	...	
DISEASES OF THE NERVOUS SYSTEM:														
Hysteria	1	...	1	...	...	1	...	...	...	...	...	1	...	
Convulsions	1	1	...	1	...	...	...	...	...	...	...	1	...	
Cerebral irritation	2	2	...	...	...	...	...	...	...	...	2	2	...	

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Epilepsy	2	1	1	...	...	...	...	1	1	...	...	2	...	
,, Jacksonian	2	...	2	...	...	...	2	...	...	...	...	2	...	
Hemiplegia (old)	1	1	...	...	...	...	...	...	...	1	...	1	...	
Crutch palsy	1	...	1	...	...	...	1	...	...	...	...	1	...	
Hydrocephalus	1	...	1	1	...	...	...	...	...	...	...	1	...	
Spina bifida	2	1	1	2	...	...	...	...	...	...	...	1	1	Died of exhaustion.
Diseases of the Breast:														
Hypertrophy	1	...	1	...	...	...	...	1	...	...	...	1	...	
Diseases of the Eye:														
Corneal opacity	1	1	...	...	...	...	...	...	1	...	...	1	...	
,, ulcer (sloughing)	1	...	1	...	...	...	...	...	...	1	...	...	1	Died of hypostatic pneumonia. No P.M.
Cataract	2	...	2	...	...	...	...	...	1	...	1	2	...	
Glaucoma	1	...	1	...	...	...	...	...	...	1	...	1	...	
Old blind eye	1	...	1	...	...	...	...	...	...	...	1	1	...	
Diseases of the Ear:														
Suppurative otitis media	13	9	4	1	1	7	3	...	1	...	...	12	1	Died of pyæmia.
Deafness	1	...	1	...	...	1	...	...	...	...	...	1	...	
Diseases of the Nose:														
Polypi	2	1	1	...	...	2	...	...	...	...	...	2	...	
Empyema of antrum	1	...	1	...	...	...	...	...	1	...	...	1	...	
Diseases of Pharynx and Larynx:														
Enlarged tonsils	2	1	1	...	...	1	1	...	...	...	...	2	...	
Enlarged tonsils and adenoids	3	1	2	1	1	1	...	...	...	...	...	3	...	
Syphilitic ulceration of tonsils	3	3	...	...	...	...	2	1	...	...	...	3	...	
Tonsillitis	1	1	...	...	...	1	...	...	...	...	...	1	...	
Adenoids	12	9	3	3	3	5	1	...	...	...	...	12	...	
Palsy of abductors of larynx	1	1	...	...	...	...	...	1	...	...	...	1	...	

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TABLE I.—*continued.*

DISEASES.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
MALFORMATIONS AND DEFORMITIES:														
Hare lip	5	3	2	5	...	...	...	...	...	...	...	4	1	Died 3 weeks after operation of "fits."
Cleft palate	2	...	2	...	2	...	...	...	...	...	...	2	...	
Torticollis	1	...	1	...	...	1	...	...	...	...	...	1	...	
Supernumerary thumb	1	...	1	1	...	...	...	...	...	...	...	1	...	
Contracted hand	1	...	1	...	...	1	...	...	...	...	...	1	...	
,, arm	1	...	1	1	...	...	...	...	...	...	...	1	...	
Webbed toes	1	1	...	...	...	...	1	...	...	...	...	1	...	
Hammer toe	6	3	3	...	...	4	2	...	...	...	...	6	...	
Hallux valgus	2	1	1	...	...	...	1	1	...	...	...	2	...	
Flat foot	7	5	2	...	...	5	1	...	1	...	...	7	...	
Talipes.														
Equinus	1	...	1	1	...	...	...	...	...	...	...	1	...	
Calcaneus	1	...	1	...	1	...	...	...	...	...	...	1	...	
Deformed legs	2	...	2	...	1	...	1	...	...	...	...	2	...	
Bow legs	1	...	1	1	...	...	...	...	...	...	...	1	...	
Genu valgum	6	2	4	2	2	2	...	...	...	...	...	6	...	
Congenital dislocation of hip	5	...	5	...	5	...	...	...	...	...	...	5	...	
Lateral curvature of spine	3	...	3	...	...	2	1	...	...	...	...	3	...	
DISEASES OF THE NERVOUS SYSTEM:														
Hysteria	1	...	1	...	...	1	...	...	...	...	...	1	...	
Convulsions	1	1	...	1	...	...	...	...	...	...	...	1	...	
Cerebral irritation	2	2	...	...	...	...	...	...	...	...	2	2	...	

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Epilepsy	2	1	1	...	...	...	...	1	1	...	...	2	...	
,, Jacksonian	2	...	2	...	...	...	2	...	...	...	...	2	...	
Hemiplegia (old)	1	1	...	...	...	...	...	...	...	1	...	1	...	
Crutch palsy	1	...	1	...	...	...	1	...	...	...	...	1	...	
Hydrocephalus	1	...	1	1	...	...	...	...	...	...	...	1	...	
Spina bifida	2	1	1	2	...	...	...	...	...	...	...	1	1	Died of exhaustion.
Diseases of the Breast:														
Hypertrophy	1	...	1	...	...	...	...	1	...	...	...	1	...	
Diseases of the Eye:														
Corneal opacity	1	1	...	...	...	...	...	...	1	...	...	1	...	
,, ulcer (sloughing)	1	...	1	...	...	...	...	...	...	1	...	...	1	Died of hypostatic pneumonia. No P.M.
Cataract	2	...	2	...	...	...	...	...	1	...	1	2	...	
Glaucoma	1	...	1	...	...	...	...	...	...	1	...	1	...	
Old blind eye	1	...	1	...	...	...	...	...	...	...	1	1	...	
Diseases of the Ear:														
Suppurative otitis media	13	9	4	1	1	7	3	...	1	...	...	12	1	Died of pyæmia.
Deafness	1	...	1	...	...	1	...	...	...	...	...	1	...	
Diseases of the Nose:														
Polypi	2	1	1	...	...	2	...	...	...	...	...	2	...	
Empyema of antrum	1	...	1	...	...	...	...	...	1	...	...	1	...	
Diseases of Pharynx and Larynx:														
Enlarged tonsils	2	1	1	...	...	1	1	...	...	...	...	2	...	
Enlarged tonsils and adenoids	3	1	2	1	1	1	...	...	...	...	...	3	...	
Syphilitic ulceration of tonsils	3	3	...	...	...	...	2	1	...	...	...	3	...	
Tonsillitis	1	1	...	...	...	1	...	...	...	...	...	1	...	
Adenoids	12	9	3	3	3	5	1	...	...	...	...	12	...	
Palsy of abductors of larynx	1	1	...	...	...	...	...	1	...	...	...	1	...	

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TABLE I.—*continued.*

DISEASES.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
DISEASES OF THE THYROID:														
Cystic enlargement	3	...	3	...	...	1	...	1	1	...	...	3	...	
Parenchymatous bronchocele	3	...	3	...	1	2	...	...	...	...	...	3	...	
Malignant ,,	2	...	2	...	...	1	...	...	...	...	1	1	1	Died of pneumonia.
DISEASES OF CHEST:														
Pleurisy	1	1	...	...	...	...	...	...	1	...	...	1	...	
Empyema	6	4	2	1	1	...	3	1	...	...	...	6	...	
DISEASES OF THE VASCULAR SYSTEM:														
Veins.														
Varicose	22	8	14	...	...	...	14	6	...	2	...	22	...	
Varicocele	5	5	...	...	...	2	3	...	...	...	...	5	...	
Popliteal aneurism	1	1	...	...	...	...	1	...	...	...	...	1	...	
Infective endocarditis	1	...	1	...	...	...	1	...	...	...	...	...	1	
DISEASES OF THE LYMPHATIC SYSTEM:														
Lymphangitis	1	...	1	...	...	1	...	...	...	...	...	1	...	
Tuberculous glands	29	10	19	...	5	13	7	3	1	...	...	29	...	
Inflammatory glands	4	2	2	...	...	...	...	3	1	...	...	4	...	
Lymphadenoma	1	1	...	...	...	1	...	...	...	...	...	1	...	

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DISEASES OF THE DIGESTIVE SYSTEM, &c.:														
Mouth:														
Salivary calculus	1	...	1	...	...	...	1	...	...	...	...	1	...	
Œsophagus:														
Stricture of	2	1	1	...	...	...	...	...	1	...	1	2	...	
Stomach:														
Hæmatemesis	1	1	...	...	...	...	1	...	...	...	...	1	...	
New growth of	1	...	1	...	...	...	...	...	...	...	1	1	...	
Dilated	4	1	3	...	...	...	1	...	2	1	...	4	...	
Pyloric stenosis	5	...	5	...	...	...	...	...	2	2	1	3	2	Both cases died following operation (pyloroplasty).
Perforating ulcer of	1	...	1	...	...	1	...	...	...	...	...	...	1	Sutured, died 23 days after operation; pus found in pelvis, post-mortem.
Intestines:														
Hernia:														
Reducible inguinal	29	26	3	3	2	10	7	3	3	1	...	29	...	
,, femoral	2	...	2	...	...	...	...	1	1	...	...	2	...	
Irreducible femoral	1	1	...	...	...	...	...	...	1	...	...	1	...	
,, umbilical	1	...	1	...	...	...	...	...	...	...	1	1	...	
Strangulated inguinal	5	4	1	...	...	1	1	1	1	...	1	2	3	All died from shock following operation.
,, femoral	4	...	4	...	...	...	...	1	2	1	...	2	2	In one case patient died from shock following resection of gangrenous gut; the other from exhaustion.
,, umbilical	1	...	1	...	...	...	...	...	...	...	1	...	1	Died of exhaustion.
Hydrocele of femoral hernial sac	1	...	1	...	...	...	1	...	...	...	...	1	...	
Intestinal obstruction	5	2	3	...	1	1	...	1	1	...	1	2	3	One case died from peritonitis following perforation of gut, the other two from exhaustion.
Appendicitis	20	12	8	...	1	5	8	4	2	...	...	19	1	Died of exhaustion.
Ulcerative colitis	2	...	2	...	...	...	...	...	1	1	...	...	2	One case died 4 days, the other 5 days after colotomy.
Fæcal fistula	2	...	2	...	...	1	1	...	...	...	...	1	1	Died of exhaustion.
Diarrhœa	1	1	...	1	...	...	...	...	...	...	...	...	1	Died of collapse, no post-mortem.

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TABLE I.—*continued.*

DISEASES.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
DISEASES OF THE DIGESTIVE SYSTEM, &C.—*continued.*														
Intestines—contd.														
Cyst of mesocolon	1	...	1	...	...	...	...	...	...	1	...	...	1	Died of exhaustion following laparotomy and fatty heart.
Abscess in mesentery	1	...	1	...	1	...	...	...	...	...	...	...	1	Died of broncho-pneumonia; abscess was opened and stitched to abdominal wall.
Abdominal pain	6	3	3	...	...	1	1	1	...	...	3	6	...	
Ascites	2	1	1	...	...	...	2	...	...	...	...	2	...	
Malignant disease of abdomen	2	1	1	...	...	...	...	...	2	...	...	2	...	
Tuberculous peritonitis	1	1	...	...	...	1	...	...	...	...	...	1	...	
Rectum and anus:														
Fistula	6	4	2	...	...	...	2	1	1	2	...	6	...	
Fissure	3	1	2	...	...	...	...	1	1	1	...	3	...	
Hæmorrhoids	12	4	8	...	...	...	3	3	4	2	...	11	1	Patient died from (?) pernicious anæmia.
Prolapse	2	1	1	...	...	...	1	...	...	1	...	2	...	
Stricture	1	...	1	...	...	...	...	...	..	...	1	1	...	
Polypus	2	1	1	1	1	...	...	...	...	...	...	2	...	
Discomfort (? cause)	1	...	1	...	...	...	...	1	...	...	...	1	...	
DISEASES OF THE GENITO-URINARY ORGANS:														
Kidney:														
Pyonephrosis	3	3	...	...	...	...	...	1	...	2	...	3	...	

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Calculus	5	2	3	...	...	...	3	2	...	...	...	3	2	One case died of exhaustion 25 days after nephrolithotomy, the other of hæmorrhage following nephrolithotomy.
Moveable	6	1	5	...	...	...	...	2	3	...	1	6	...	
Tuberculous	4	2	2	...	...	...	2	1	1	...	..	3	1	Died of uræmia.
Bladder:														
Cystitis	3	3	...	...	...	...	3	...	...	...	...	3	...	
Calculus	5	5	...	...	1	...	...	...	1	1	2	4	1	Died of acute suppurative nephritis.
Tuberculous	1	1	...	...	...	1	...	...	...	...	...	1	...	
Malignant	6	6	...	...	...	...	...	...	2	4	...	5	1	Died of exhaustion.
Urethra:														
Stricture	12	12	...	...	...	...	4	...	6	1	1	12	...	
Calculus in	1	1	...	...	1	...	...	...	...	...	...	1	...	
Prostate:														
Enlarged	5	5	...	...	...	...	...	...	...	2	3	4	1	Died of Uræmia.
Penis:														
Phimosis	6	6	...	2	...	2	...	1	...	1	...	6	...	
Paraphimosis	1	1	...	...	...	...	1	...	...	...	...	1	...	
Hæmaturia (? cause)	1	1	...	...	...	1	...	...	...	...	...	1	...	
Retention of urine	1	1	...	...	...	...	...	1	...	...	...	1	...	
Extravasation of urine	2	2	...	...	...	...	...	...	1	1	...	2	...	
Testis:														
Undescended	4	4	...	...	1	3	...	...	...	...	...	4	...	
Tuberculous disease	3	3	...	...	...	...	1	...	2	...	...	2	1	Died of tuberculous meningitis.
Syphilitic ,,	1	1	...	...	...	...	...	...	...	1	...	1	...	
Tunica Vaginalis:														
Vaginal hydrocele	4	4	...	2	...	...	...	1	1	...	...	4	...	
Hæmatocele	1	1	...	...	...	...	1	...	...	...	...	1	...	
Cord:														
Encysted hydrocele of	1	1	...	...	...	...	...	...	1	..	...	1	...	
Hæmatoma of	1	1	...	...	...	...	..	...	1	...	...	1	...	

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TABLE I.—*continued.*

DISEASES.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
DISEASES OF THE GENITO-URINARY ORGANS—*contd.*														
Uterus:														
Infective endometritis	1	...	1	...	...	...	1	...	...	...	...	...	1	Died of pyæmia.
Fallopian tubes:														
Pyosalpinx	2	...	2	...	...	...	1	1	...	...	...	...	2	Both died of peritonitis following rupture.
Extra-uterine fœtation	1	...	1	...	...	...	...	1	...	...	...	1	...	
DISEASES OF THE ORGANS OF LOCOMOTION:														
BONE, DISEASES OF:														
Periostitis and Osteitis:														
Jaw	1	1	...	1	...	...	...	...	...	...	..	1	...	
Bones of upper extremity	2	2	...	...	...	2	...	...	...	...	...	2	...	
,, lower ,,	4	3	1	1	...	1	1	...	1	...	...	4	...	
Caries and Necrosis:														
Jaw	3	3	...	...	...	...	2	...	1	...	...	3	...	
Frontal	1	...	1	...	...	...	...	1	...	...	...	1	...	
Ribs and Sternum	2	2	...	...	...	...	...	2	...	...	...	2	...	
Spine	9	4	5	...	1	1	4	2	1	...	...	7	2	One died of uræmia, the other had paraplegia and died 30 days after laminectomy.
Bones of upper extremity	6	2	4	...	...	5	...	...	...	1	...	6	...	
,, lower ,,	12	6	6	2	1	4	3	...	2	...	...	12	...	
Hyperostosis of bones	1	1	...	...	...	...	1	...	...	...	..	1	...	
Infective Periostitis	1	...	1	...	...	1	...	...	...	...	...	1	...	
,, Osteo-myelitis	2	2	...	...	...	1	...	1	...	...	...	1	1	Died of pyæmia.

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Acute epiphysitis	2	1	1	1	...	1	...	...	...	...	...	2	...	
Epiphysitis	1	...	1	1	...	...	...	...	...	...	...	1	...	
DISEASES OF JOINTS:														
Ankylosis	3	2	1	...	1	...	1	...	...	1	...	3	...	
Synovitis: of														
Knee	5	4	1	...	...	...	2	...	1	2	...	5	...	
Gonorrhœal	3	2	1	...	...	...	1	2	...	...	...	3	...	
Tuberculous disease: of														
Tarsus	5	2	3	1	...	2	1	1	...	..	...	5	...	
Ankle	1	1	...	1	...	...	...	...	...	...	...	1	...	
Knee	12	8	4	...	3	8	1	...	...	...	...	12	...	
Hip	10	5	5	4	1	3	2	...	...	...	...	9	1	Died of collapse following diarrhœa.
Sacro-iliac	1	...	1	...	...	...	...	...	1	...	...	...	1	Died of shock following operation.
Shoulder	1	1	...	...	...	...	1	...	...	...	...	1	...	
Elbow	5	4	1	...	1	2	2	...	...	...	...	5	...	
Loose semilunar cartilage: knee	1	1	...	...	...	...	1	...	...	...	...	1	...	
Cyst of knee joint	1	1	...	...	...	...	1	...	...	...	...	1	...	
Charcot's disease of shoulder	1	1	...	...	...	...	...	...	...	...	1	1	...	
Hysterical joint	1	1	...	...	...	1	...	...	...	...	...	1	...	
Pain in hip joint (? cause)	1	...	1	...	...	...	1	...	...	...	...	1	...	
DISEASES OF FASCIÆ, BURSÆ, AND TENDONS:														
Inflamed bursæ	4	...	4	...	...	3	...	1	...	...	...	4	...	
Enlarged ,,	3	...	3	...	...	2	1	...	...	...	...	3	...	
Tuberculous ,,	1	...	1	...	...	1	...	...	...	...	...	1	...	
,, teno-synovitis	1	...	1	1	...	...	...	...	...	...	...	1	...	
Ganglion	1	...	1	...	...	...	1	...	...	...	...	1	...	
DISEASES OF CELLULAR TISSUE: INFLAMMATION AND SUPPURATION:														
Abscesses: of														
Head, face, and neck	26	17	9	3	5	7	6	2	...	2	1	26	...	
Mastoid	5	3	2	...	...	3	...	...	1	1	...	4	1	Died of meningitis.

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TABLE I.—*continued.*

DISEASES.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
DISEASES OF CELLULAR TISSUE—*continued.*														
INFLAMMATION AND SUPPURATION:														
Abscesses—contd.														
Upper extremity	17	11	6	2	3	1	6	1	1	2	1	17	...	
Lower ,,	8	4	4	2	2	1	2	...	1	...	...	8	...	
Ischio-rectal ,,	3	3	...	...	...	2	1	..	...	...	...	3	...	
Perineum, groin, and labium	8	7	1	...	1	...	6	...	1	...	...	8	...	
Pericæcal and appendicular	4	4	...	..	1	...	1	2	...	...	...	4	...	
Psoas	4	3	1	...	2	...	1	1	...	...	...	4	...	
Lumbar	4	3	1	...	...	1	3	...	...	...	...	4	...	
Mammary	12	...	12	...	...	2	7	3	...	...	...	12	...	
Abdominal wall	1	1	...	...	...	1	...	...	...	...	...	1	...	
Whitlow	6	5	1	...	1	...	1	1	1	1	1	6	...	
Sub-phrenic	1	1	...	...	...	...	...	...	1	...	...	1	...	
Cerebral	1	1	...	...	...	1	...	...	...	...	...	1	...	
Of lung	1	...	1	1	...	...	...	...	...	...	...	...	1	Died of exhaustion.
Carbuncle	5	4	1	...	...	...	2	...	...	2	1	5	...	
Cellulitis	18	13	5	1	1	1	7	4	3	1	...	17	1	Died of septicæmia.
DISEASES OF CUTANEOUS SYSTEM:														
Sinuses	18	16	2	1	1	1	7	3	...	4	1	18	...	
Ulcers	10	4	6	...	...	...	2	1	3	2	2	10	...	

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Perforating ulcers	4	4	...	...	...	...	...	3	...	1	4	...	
Prurigo hebræ	1	...	1	...	...	1	...	...	...	...	1	...	
Lupus	7	3	4	...	1	3	2	...	...	1	7	..	
Tubercle of skin	1	1	...	...	...	...	1	...	...	...	1	...	
Eczema	1	...	1	...	...	...	...	...	1	...	1	...	
Tender scar	1	1	...	...	...	1	...	...	...	...	1	...	
Ingrowing toe-nail	1	1	...	...	...	...	...	1	...	...	1	...	
Impetigo contagiosa	1	1	...	...	...	1	...	...	...	...	1	...	
Psoriasis	1	1	...	...	...	...	...	1	...	...	1	...	
Ulcerative dermatitis	1	...	1	...	...	...	...	1	...	...	...	1	Died of exhaustion.
UNCLASSIFIED:													
Mercury poisoning	1	...	1	...	...	...	..	1	...	...	1	...	
Coccygeal pain	2	...	2	...	...	1	1	...	...	...	2	...	
Swallowed foreign body	5	2	3	3	...	...	1	...	...	1	5	...	
Attempted suicide	2	...	2	...	...	...	...	1	...	...	2	...	

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TABLE II.—INJURIES.

INJURIES.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
GENERAL INJURIES:														
Burns	14	9	5	6	...	2	3	...	...	3	...	9	5	Three of the five cases died of shock, one of pneumonia, and one of exhaustion.
Scalds	3	2	1	2	1	...	...	...	...	...	...	3	...	
LOCAL INJURIES:—														
Injuries of head and face:														
Wounds	21	20	1	1	2	1	3	7	2	1	4	21	...	
Contusions	1	1	...	1	...	...	...	...	...	...	...	1	...	
Concussion	6	5	1	...	1	1	2	1	1	...	...	6	...	
Fractures:														
Base of skull	4	4	..	...	...	...	...	...	1	2	1	1	3	All cases died of cerebral compression.
Lower jaw	2	1	1	...	...	...	2	...	...	...	...	2	...	
Injuries of neck:														
Cut throat	1	1	...	...	...	...	...	...	1	...	...	1	...	
Fractured thyroid cartilage	1	...	1	...	...	...	1	...	...	...	...	1	...	
Injuries of the thorax:														
Fractured ribs	4	3	1	...	...	...	...	...	2	2	...	4	...	
Injuries of the back:														
Contusions	4	3	1	...	...	...	2	1	...	1	...	4	...	
Concussion of spine	1	1	...	...	...	...	...	...	1	...	...	1	...	
Fracture-dislocation of spine	2	2	...	...	...	...	1	...	1	...	...	...	2	Both cases died of exhaustion.

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Injuries of pelvis and genital organs:													
Wound of scrotum	3	3	...	1	1	...	...	...	1	...	...	3	...
Wound of vagina	1	...	1	...	...	...	...	1	...	...	...	1	...
Wound of perineum	1	1	...	...	...	1	...	...	...	...	...	1	...
INJURIES OF UPPER EXTREMITIES:													
Wounds	5	3	2	...	...	1	2	...	...	1	1	5	...
Contusions	1	1	...	...	...	..	...	...	1	...	...	1	...
Foreign bodies in	2	1	1	...	...	...	1	...	...	...	1	2	...
Fractures:													
Simple:													
Humerus	7	3	4	1	...	2	...	...	1	1	2	7	...
Radius and ulna	1	1	...	...	...	...	...	1	...	...	...	1	...
Compound:													
Humerus	1	...	1	1	...	...	...	...	...	...	...	1	...
Radius	1	1	...	...	...	...	...	...	1	...	...	1	...
Dislocations:													
Simple:													
Clavicle	1	1	...	...	...	...	1	...	...	...	...	1	...
Elbow	1	1	...	...	...	...	...	1	...	...	...	1	...
Compound:													
Interphalangeal	1	1	...	...	...	...	...	1	...	...	...	1	...
INJURIES OF LOWER EXTREMITIES:													
Wounds	1	1	...	...	...	...	1	...	...	...	...	1	...
Contusions	3	2	1	...	...	...	1	1	1	...	...	3	...
Sprains	7	2	5	...	...	...	3	3	...	1	...	7	...
Ruptured quadriceps extensor	1	1	...	...	...	...	...	...	1	...	...	1	...
Crushed foot	3	3	...	...	...	...	1	1	...	1	...	3	...
Foreign bodies in	6	2	4	1	...	3	1	...	...	1	...	6	...

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TABLE II.—*continued.*

INJURIES.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
INJURIES OF LOWER EXTREMITIES—*continued.*														
Fractures:														
Simple:														
Femur	14	9	5	2	6	1	1	1	...	...	3	14	...	
Patella	3	2	1	...	...	...	1	1	1	...	...	3	...	
Tibia	6	4	2	...	...	2	1	1	1	1	...	6	...	
Tibia and fibula	5	4	1	..	1	2	...	1	1	...	...	5	...	
Fibula	7	5	2	...	...	...	1	1	3	2	...	7	...	
Pott's	4	4	...	...	...	...	1	2	1	...	...	4	...	
Compound:														
Femur	3	3	...	...	...	...	...	1	2	...	...	2	1	Patient æt. 46, died after amputation of thigh.
Tibia	5	4	1	...	1	2	...	...	...	1	1	5	...	

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Table III.—Operations.

Operations.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
Removal of Tumours:														
Carcinoma:														
Breast	13	...	13	...	...	...	...	1	8	2	2	13	...	
Colon	1	1	...	...	...	...	...	...	...	1	...	...	1	Died of shock.
Epithelioma:														
Tongue	2	2	...	...	...	...	...	...	...	1	1	2	...	
Tongue and glands	4	4	...	...	...	...	...	...	...	2	2	3	1	Died of septic pneumonia.
Floor of mouth	1	1	...	...	...	...	...	...	...	1	...	1	...	
Cervical glands	1	1	...	...	...	...	...	...	...	...	1	1	...	
Of forearm	1	1	...	...	...	...	...	...	...	1	...	1	...	
Rodent Ulcer	2	2	...	...	...	...	...	...	...	1	1	2	...	
Sarcoma:														
Skin	3	3	...	...	...	...	...	...	...	1	2	2	1	Died of asthenia.
Other tumours:														
Papilloma	2	...	2	...	...	...	...	...	1	...	1	2	...	
Fibroma	2	...	2	...	...	...	1	...	1	...	...	1	1	This case died of peritonitis. It was a fibroma of broad ligament.
Fibro-adenoma	4	...	4	..	...	...	2	1	1	...	...	4	...	
Adenoma	1	1	...	...	...	...	...	...	1	...	...	1	...	
Lipoma	4	2	2	...	...	1	2	...	...	...	1	4	...	
Angioma	3	1	2	1	...	...	1	...	1	...	...	3	...	
Cysts:														
Dermoids	3	1	2	...	...	...	3	...	...	...	...	3	...	
Serous	1	1	...	1	...	...	...	...	...	...	...	1	...	
Sebaceous	1	1	...	...	...	...	...	...	1	...	...	1	...	
Ovarian	10	...	10	...	...	...	2	1	2	4	1	9	1	Died of exhaustion.

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TABLE III.—*continued.*

OPERATIONS.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
OPENING ABSCESSES:														
Acute and chronic	94	59	35	7	10	21	32	9	5	7	3	93	1	Died of meningitis, case of mastoid abscess.
OPERATIONS ON NERVES:														
Exploring brachial plexus.....	1	1	...	...	...	...	1	...	...	...	...	1	...	
OPERATIONS ON THE EYE:														
Cataract extraction	2	1	1	...	...	...	...	...	...	...	2	2	...	
Iridectomy	1	1	...	...	...	...	...	...	1	...	...	1	...	
Incising cornea	1	...	1	...	...	...	...	...	...	1	...	...	1	Died of hypostatic congestion.
Excision of globe.....	1	...	1	...	...	...	...	...	...	...	1	1	...	
OPERATIONS ON THE NOSE:														
Opening empyema of antrum ...	1	...	1	...	...	...	...	...	1	...	...	1	...	
Turbinectomy	2	1	1	...	...	1	1	...	...	...	...	2	...	
Rouge's operation	1	...	1	...	...	1	...	...	...	...	...	1	...	
Exploration	1	1	...	...	...	...	1	...	...	...	...	1	...	
Removal of polypi	2	1	1	...	...	2	...	...	...	...	...	2	...	
OPERATIONS ON THE PHARYNX AND LARYNX, &C.														
Tonsillotomy	2	2	...	...	...	1	1	...	...	...	...	2	...	
Adenoids	11	7	4	3	4	4	...	...	..	...	...	11	...	
Adenoids and tonsils	3	1	2	1	1	1	...	...	...	...	...	3	...	
Tracheotomy	4	2	2	...	...	...	...	1	1	2	...	4	...	
Thyrotomy	1	1	...	...	...	...	1	...	...	...	...	1	...	

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OPERATIONS ON THE HEAD AND SPINE:														
Exploring brain	1	1	...	...	...	1	...	...	...	...	...	1	...	
Excision of spina bifida	1	1	...	1	...	...	...	...	...	...	...	1	...	
Extension of spine	1	...	1	...	...	...	1	...	...	...	...	...	1	Died of exhaustion. Case of fracture-dislocation of spine.
OPERATIONS ON THYROID GLAND:														
Dividing isthmus	1	...	1	...	...	1	...	...	...	...	...	1	...	
Excising cyst of	3	...	3	...	...	1	...	1	1	...	...	3	...	
Excising part of	2	...	2	...	...	2	...	...	...	...	...	2	...	
Exploration of	1	...	1	...	...	...	...	...	...	...	1	...	1	Growth malignant and incurable.
OPERATIONS ON VEINS AND ARTERIES:														
Varicose veins	16	6	10	...	...	...	10	6	...	...	...	16	...	
Varicocele	5	5	...	...	...	2	3	...	...	...	...	5	...	
Ligature of femoral artery	1	1	...	...	...	...	1	...	...	...	...	1	...	
OPERATIONS ON THE CHEST:														
Tapping	1	1	...	...	...	...	1	...	...	...	...	1	...	
Opening empyema	6	4	2	1	1	...	3	1	...	...	...	6	...	
OPERATIONS ON THE MOUTH:														
Removal of salivary calculus	1	...	1	...	...	...	1	...	...	...	...	1	...	
OPERATIONS ON THE ŒSOPHAGUS:														
Removal of foreign body from	2	1	1	2	...	...	...	...	...	...	...	2	...	

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TABLE III.—*continued.*

OPERATIONS.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
OPERATIONS ON THE ABDOMEN :														
Pyloroplasty	6	1	5	...	...	...	...	...	4	2	..	4	2	One case had stenosis from old ulcer and died 5 days after operation, the other died of surgical kidneys.
Gastrostomy	3	2	1	...	...	...	...	...	1	1	1	2	1	Died of collapse after operation.
Gastro-jejunostomy	2	1	1	...	...	...	...	...	...	1	1	1	1	Died of exhaustion.
Gastro-duodenostomy	1	...	1	...	...	...	...	...	...	...	1	1	...	
Laparotomy for :														
Perforating gastric ulcer	1	...	1	...	...	1	...	...	...	...	...	...	1	Ulcer sutured ; pus found in pelvis post mortem.
Intestinal obstruction	4	2	2	...	1	1	...	...	1	...	1	1	3	(1) Gut gave way, no P.M. ; ? cause of obstruction ; (2) Meckel's diverticulum formed a band, gut gangrenous, excised, immediate suture ; (3) volvulus of small intestine.
Excising appendix	12	6	6	...	...	2	6	3	1	...	...	12	...	
Cyst of mesocolon	1	...	1	...	...	...	...	...	...	1	...	...	1	Died of fatty heart.
Exploring fæcal fistula	2	...	2	...	...	1	1	...	...	...	...	1	1	Died of exhaustion.
Hepatic abscess	1	...	1	...	...	1	...	...	...	...	...	...	1	Secondary to appendicitis.
Exploring liver	1	...	1	...	...	...	...	...	...	1	...	1	...	
Cholecystotomy	1	...	1	...	...	...	...	...	1	...	...	...	1	Patient died of malignant disease of pancreas.
Tubercular peritonitis	1	1	...	...	...	1	...	...	...	...	...	1	...	
Pyosalpinx	2	...	2	...	...	...	1	1	...	...	...	...	2	One case died of intestinal obstruction, the other got gangrene of wound.
Exploring abdomen	2	...	2	...	...	1	...	...	1	...	...	2	...	
Draining mesenteric abscess	1	...	1	...	1	...	...	...	...	...	...	...	1	Died of broncho-pneumonia.
Tapping for ascites	1	1	...	...	...	1	...	...	...	...	...	1	...	
Median colotomy	1	...	1	...	...	...	...	...	1	...	...	1	...	
Inguinal colotomy	4	1	3	...	...	...	...	1	1	1	1	2	2	One case died of pneumonia, the other of exhaustion.

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Operations on Abdomen— *continued.*														
Operations on Hernia:														
Strangulated inguinal	4	4	...	...	...	...	1	1	1	...	1	1	3	(1) Gangrenous gut resected; (2) omentum strangulated high up, the wound was extended into general peroneal cavity; (3) died of exhaustion.
Strangulated femoral	4	...	4	...	...	...	...	1	2	1	...	2	2	(1) Died of exhaustion, no P.M.; (2) gut gangrenous, resected.
Strangulated umbilical	1	...	1	...	...	...	...	...	...	...	1	...	1	Died of exhaustion.
Radical cure:														
Inguinal	22	21	1	2	1	7	5	3	3	1	...	22	...	
Femoral	2	1	1	...	...	...	...	...	2	...	...	2	...	
Umbilical	1	...	1	...	...	...	...	...	...	...	1	1	...	
Hydrocele hernial sac	1	...	1	...	...	...	1	...	...	...	...	1	...	
Operations on Rectum and Anus:														
Hæmorrhoids	10	2	8	...	...	...	3	3	2	2	...	9	1	Patient died of ? pernicious anæmia.
Fissure	4	1	3	...	...	...	...	2	1	1	...	4	...	
Fistula in ano	6	4	2	...	...	...	2	1	1	2	...	6	...	
Prolapse	1	...	1	...	...	...	...	1	...	...	...	1	...	
Polypus	1	1	...	...	1	...	...	...	...	...	...	1	...	
Excision	1	...	1	...	...	...	...	1	...	...	...	1	...	
Operations on Urogenital Organs:														
Penis:														
Slitting prepuce	2	2	...	...	...	...	1	1	...	...	...	2	...	
Circumcision	7	7	...	3	...	3	...	...	...	1	...	7	...	
Urethra:														
Internal urethotomy	3	3	...	...	...	...	1	...	2	...	...	3	...	
Perineal section	3	3	...	...	...	...	...	...	2	1	...	3	...	

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TABLE III.—*continued.*

OPERATIONS.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
OPERATIONS ON UROGENITAL ORGANS—*continued.*														
Urethra—contd.														
Wheelhouse's operation	2	2	...	...	...	...	1	...	1	...	...	2	...	
Removal of calculus from	1	1	...	...	1	...	...	...	...	...	...	1	...	
Prostate:														
Suprapubic prostatectomy	1	1	...	...	...	...	...	...	...	1	...	1	...	
Bladder:														
Exploration of	1	...	1	...	...	...	...	...	...	...	1	1	...	
Perineal drainage of	1	1	...	...	...	...	...	...	...	1	...	...	1	Died of malignant disease.
Lithotrity	1	1	...	...	...	...	...	...	...	...	1	1	...	
Suprapubic lithotomy	3	3	...	...	1	...	...	...	...	2	...	3	...	
Perineal lithotomy	2	2	...	...	...	...	...	...	1	...	1	1	1	Died of acute suppurative nephritis.
Kidney:														
Exploration of	2	2	...	...	...	...	1	1	...	...	...	2	...	
Nephrotomy	2	...	2	...	...	...	...	...	1	1	...	1	1	Died of uræmia.
Nephrolithotomy	3	1	2	...	...	...	1	2	...	...	...	1	2	One died of hæmorrhage, the other of exhaustion.
Nephrorrhaphy	1	...	1	...	...	...	...	1	...	...	...	1	...	
Nephrectomy	3	2	1	...	...	...	1	1	...	1	...	3	...	
Castration	8	8	...	...	...	1	2	1	3	1	...	7	1	Died of tubercular meningitis.
Fixing testes in scrotum	3	3	...	...	1	2	...	...	...	...	...	3	...	
Excising hyrocele sac	3	3	...	2	...	...	1	...	...	...	...	3	...	
Panhysterectomy (abdominal)	2	...	2	...	...	...	...	...	2	...	...	1	1	Operation for malignant disease of uterus, died of shock.

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Operations on Bones:														
Osteotomy	7	2	5	2	3	2	...	...	...	...	...	7	...	
Opening mastoid antrum	11	6	5	...	1	6	2	1	1	...	...	10	1	Died of pyæmia.
Scraping carious bone, &c.	10	5	5	1	...	3	4	2	...	...	...	10	...	
Sequestrotomy	7	4	3	...	...	4	...	1	2	...	...	7	...	
Removal of portion of bone	8	6	2	...	1	5	...	1	1	...	...	8	...	
Trephining skull	2	1	1	...	...	1	1	...	...	...	...	1	1	For epilepsy.
Trephining other bones	1	1	...	...	...	...	1	...	...	...	...	1	...	
Excision of scaphoid (flat-foot)	1	1	...	...	...	...	1	...	...	...	...	1	...	
Excision of coccyx	1	1	...	...	...	...	1	...	...	...	...	1	...	
Laminectomy	1	1	...	...	...	...	1	...	...	...	...	...	1	Case of spinal caries and paraplegia, wound suppurated, died of exhaustion.
Suturing fractured patella	3	1	2	...	...	...	...	2	1	...	...	3	...	
Wiring ununited fracture	1	1	...	...	...	...	...	...	...	1	...	1	...	
For infective periostitis	1	...	1	...	...	1	...	...	...	...	...	1	...	
For acute epiphysitis	2	...	2	2	...	...	...	...	...	...	...	2	...	
Operations on Joints:														
Excision and arthrectomy:														
Shoulder	1	1	...	...	...	...	1	...	...	...	...	1	...	
Elbow	5	4	1	...	1	2	1	1	...	...	...	5	...	
Hip	2	1	1	1	1	...	...	...	...	...	...	2	...	
Knee	4	3	1	...	1	2	...	...	...	1	...	4	...	
Tarsus	1	...	1	...	...	...	...	1	...	...	...	1	...	
Metatarsophalangeal	3	1	2	...	...	1	1	1	...	...	...	3	...	
Incising:														
Shoulder	1	1	...	...	...	...	...	...	...	...	1	1	...	
Elbow	2	2	...	...	...	...	1	1	...	...	...	2	...	
Sacro-iliac	1	...	1	...	...	...	...	...	1	...	...	...	1	Died of shock.
Hip	1	...	1	...	...	...	1	...	..	...	...	1	...	
Knee	5	1	4	...	...	2	3	...	...	...	...	4	1	Died of infective endocarditis, joint a septic one.
Arthrodesis: mid tarsal joint	1	...	1	...	1	...	...	...	...	...	...	1	...	
Wrenching: knee	3	1	2	...	1	...	2	...	...	...	...	3	...	
,, shoulder	2	2	...	...	...	1	1	...	...	...	...	2	...	

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TABLE III.—*continued.*

OPERATIONS.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
OPERATIONS ON UROGENITAL ORGANS—*continued.*														
Urethra—contd.														
Wheelhouse's operation	2	2	...	...	...	...	1	...	1	...	...	2	...	
Removal of calculus from	1	1	...	...	1	...	...	...	...	...	...	1	...	
Prostate:														
Suprapubic prostatectomy	1	1	...	...	...	...	...	...	...	1	...	1	...	
Bladder:														
Exploration of	1	...	1	...	...	...	...	...	...	...	1	1	...	
Perineal drainage of	1	1	...	...	...	...	...	...	...	1	...	...	1	Died of malignant disease.
Lithotrity	1	1	...	...	...	...	...	...	...	...	1	1	...	
Suprapubic lithotomy	3	3	...	...	1	...	...	...	...	2	...	3	...	
Perineal lithotomy	2	2	...	...	...	...	...	...	1	...	1	1	1	Died of acute suppurative nephritis.
Kidney:														
Exploration of	2	2	...	...	...	...	1	1	...	...	...	2	...	
Nephrotomy	2	...	2	...	...	...	...	...	1	1	...	1	1	Died of uræmia.
Nephrolithotomy	3	1	2	...	...	...	1	2	...	...	...	1	2	One died of hæmorrhage, the other of exhaustion.
Nephrorrhaphy	1	...	1	...	...	...	...	1	...	...	...	1	...	
Nephrectomy	3	2	1	...	...	...	1	1	...	1	...	3	...	
Castration	8	8	...	...	...	1	2	1	3	1	...	7	1	Died of tubercular meningitis.
Fixing testes in scrotum	3	3	...	...	1	2	...	...	...	...	...	3	...	
Excising hyrocele sac	3	3	...	2	...	...	1	...	...	...	...	3	...	
Panhysterectomy (abdominal)	2	...	2	...	...	...	...	...	2	...	...	1	1	Operation for malignant disease of uterus, died of shock.

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Operations on Bones:														
Osteotomy	7	2	5	2	3	2	...	...	...	...	...	7	...	
Opening mastoid antrum	11	6	5	...	1	6	2	1	1	...	...	10	1	Died of pyæmia.
Scraping carious bone, &c.	10	5	5	1	...	3	4	2	...	...	...	10	...	
Sequestrotomy	7	4	3	...	...	4	...	1	2	...	...	7	...	
Removal of portion of bone	8	6	2	...	1	5	...	1	1	...	...	8	...	
Trephining skull	2	1	1	...	...	1	1	...	...	...	...	1	1	For epilepsy.
Trephining other bones	1	1	...	...	...	...	1	...	...	...	...	1	...	
Excision of scaphoid (flat-foot)	1	1	...	...	...	...	1	...	...	...	...	1	...	
Excision of coccyx	1	1	...	...	...	...	1	...	...	...	...	1	...	
Laminectomy	1	1	...	...	...	...	1	...	...	...	...	...	1	Case of spinal caries and paraplegia, wound suppurated, died of exhaustion.
Suturing fractured patella	3	1	2	...	...	...	...	2	1	...	...	3	...	
Wiring ununited fracture	1	1	...	...	...	...	...	...	...	1	...	1	...	
For infective periostitis	1	...	1	...	...	1	...	...	...	...	...	1	...	
For acute epiphysitis	2	...	2	2	...	...	...	...	...	...	...	2	...	
Operations on Joints:														
Excision and arthrectomy:														
Shoulder	1	1	...	...	...	...	1	...	...	...	...	1	...	
Elbow	5	4	1	...	1	2	1	1	...	...	...	5	...	
Hip	2	1	1	1	1	...	...	...	...	...	...	2	...	
Knee	4	3	1	...	1	2	...	...	...	1	...	4	...	
Tarsus	1	...	1	...	...	...	...	1	...	...	...	1	...	
Metatarsophalangeal	3	1	2	...	...	1	1	1	...	...	...	3	...	
Incising:														
Shoulder	1	1	...	...	...	...	...	...	...	...	1	1	...	
Elbow	2	2	...	...	...	...	1	1	...	...	...	2	...	
Sacro-iliac	1	...	1	...	...	...	...	...	1	...	...	...	1	Died of shock.
Hip	1	...	1	...	...	...	1	...	..	...	...	1	...	
Knee	5	1	4	...	...	2	3	...	...	...	...	4	1	Died of infective endocarditis, joint a septic one.
Arthrodesis: mid tarsal joint	1	...	1	...	1	...	...	...	...	...	...	1	...	
Wrenching: knee	3	1	2	...	1	...	2	...	...	...	...	3	...	
,, shoulder	2	2	...	...	...	1	1	...	...	...	...	2	...	

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TABLE III.—*continued.*

OPERATIONS.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
OPERATIONS ON UROGENITAL ORGANS—*continued.*														
Urethra—contd.														
Wheelhouse's operation	2	2	...	...	...	...	1	...	1	...	...	2	...	
Removal of calculus from	1	1	...	...	1	...	...	...	...	...	...	1	...	
Prostate:														
Suprapubic prostatectomy	1	1	...	...	...	...	...	...	...	1	...	1	...	
Bladder:														
Exploration of	1	...	1	...	...	...	...	...	...	...	1	1	...	
Perineal drainage of	1	1	...	...	...	...	...	...	...	1	...	...	1	Died of malignant disease.
Lithotrity	1	1	...	...	...	...	...	...	...	...	1	1	...	
Suprapubic lithotomy	3	3	...	...	1	...	...	...	...	2	...	3	...	
Perineal lithotomy	2	2	...	...	...	...	...	...	1	...	1	1	1	Died of acute suppurative nephritis.
Kidney:														
Exploration of	2	2	...	...	...	...	1	1	...	...	...	2	...	
Nephrotomy	2	...	2	...	...	...	...	...	1	1	...	1	1	Died of uræmia.
Nephrolithotomy	3	1	2	...	...	...	1	2	...	...	...	1	2	One died of hæmorrhage, the other of exhaustion.
Nephrorrhaphy	1	...	1	...	...	...	...	1	...	...	...	1	...	
Nephrectomy	3	2	1	...	...	...	1	1	...	1	...	3	...	
Castration	8	8	...	...	...	1	2	1	3	1	...	7	1	Died of tubercular meningitis.
Fixing testes in scrotum	3	3	...	...	1	2	...	...	...	...	...	3	...	
Excising hyrocele sac	3	3	...	2	...	...	1	...	...	...	...	3	...	
Panhysterectomy (abdominal)	2	...	2	...	...	...	...	...	2	...	...	1	1	Operation for malignant disease of uterus, died of shock.

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OPERATIONS ON BONES:														
Osteotomy	7	2	5	2	3	2	...	...	...	...	...	7	...	
Opening mastoid antrum	11	6	5	...	1	6	2	1	1	...	...	10	1	Died of pyæmia.
Scraping carious bone, &c.	10	5	5	1	...	3	4	2	...	...	...	10	...	
Sequestrotomy	7	4	3	...	...	4	...	1	2	...	...	7	...	
Removal of portion of bone	8	6	2	...	1	5	...	1	1	...	...	8	...	
Trephining skull	2	1	1	...	...	1	1	...	...	...	...	1	1	For epilepsy.
Trephining other bones	1	1	...	...	...	...	1	...	...	...	...	1	...	
Excision of scaphoid (flat-foot)	1	1	...	...	...	...	1	...	...	...	...	1	...	
Excision of coccyx	1	1	...	...	...	...	1	...	...	...	...	1	...	
Laminectomy	1	1	...	...	...	...	1	...	...	...	...	...	1	Case of spinal caries and paraplegia, wound suppurated, died of exhaustion.
Suturing fractured patella	3	1	2	...	...	...	...	2	1	...	...	3	...	
Wiring ununited fracture	1	1	...	...	...	...	...	...	...	1	...	1	...	
For infective periostitis	1	...	1	...	...	1	...	...	...	...	...	1	...	
For acute epiphysitis	2	...	2	2	...	...	...	...	...	...	...	2	...	
OPERATIONS ON JOINTS:														
Excision and arthrectomy:														
Shoulder	1	1	...	...	...	...	1	...	...	...	...	1	...	
Elbow	5	4	1	...	1	2	1	1	...	...	...	5	...	
Hip	2	1	1	1	1	...	...	...	...	...	...	2	...	
Knee	4	3	1	...	1	2	...	...	...	1	...	4	...	
Tarsus	1	...	1	...	...	...	...	1	...	...	...	1	...	
Metatarsophalangeal	3	1	2	...	...	1	1	1	...	...	...	3	...	
Incising:														
Shoulder	1	1	...	...	...	...	...	...	...	...	1	1	...	
Elbow	2	2	...	...	...	...	1	1	...	...	...	2	...	
Sacro-iliac	1	...	1	...	...	...	...	...	1	...	...	...	1	Died of shock.
Hip	1	...	1	...	...	...	1	...	..	...	...	1	...	
Knee	5	1	4	...	...	2	3	...	...	...	...	4	1	Died of infective endocarditis, joint a septic one.
Arthrodesis: mid tarsal joint	1	...	1	...	1	...	...	...	...	...	...	1	...	
Wrenching: knee	3	1	2	...	1	...	2	...	...	...	...	3	...	
,, shoulder	2	2	...	...	...	1	1	...	...	...	...	2	...	

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TABLE III.—*continued.*

OPERATIONS.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
OPERATIONS ON JOINTS—*contd.*														
Wrenching: foot	3	3	...	...	...	2	1	...	...	...	...	3	...	
Excising semilunar cartilage of knee	1	1	...	...	...	...	1	...	...	...	...	1	...	
Excising cyst of knee joint	1	1	...	...	...	...	1	...	...	...	...	1	...	
Exploration of knee	1	...	1	...	...	...	1	...	...	...	...	1	...	
AMPUTATIONS:														
Hip	1	1	...	...	...	...	...	...	1	...	...	1	...	
Thigh	6	4	2	...	1	...	2	1	1	...	1	4	2	One case that died was suffering from osteomyelitis of femur, the other from compound fracture of femur.
Leg	2	1	1	1	...	...	...	1	...	...	...	2	...	
Syme	3	2	1	2	...	...	1	...	...	...	...	3	...	
Lisfranc	1	1	...	...	...	...	1	...	...	...	...	1	...	
Toe	10	8	2	...	1	4	1	1	2	1	...	10	...	
Shoulder	1	...	1	...	...	...	...	...	1	...	...	...	1	Died of shock, case septicæmic.
Thumb (supernumerary)	1	...	1	1	...	...	...	...	...	...	...	1	...	
Finger	3	1	2	...	...	2	...	...	...	1	...	3	...	
OPERATIONS ON LYMPHATIC SYSTEM:														
Excising glands	20	5	15	...	3	9	3	3	2	...	...	20	...	
Scraping glands	7	4	3	...	1	4	1	1	...	...	...	7	...	

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Operations on Muscles, Tendons, &c.														
Excising bursæ	4	1	3	...	...	4	...	...	...	...	...	4	...	
Excising ganglion	1	...	1	...	...	...	1	...	...	...	...	1	...	
For tubercle of tendon sheaths	1	...	1	1	...	...	...	...	...	...	...	1	...	
Tenotomy	8	2	6	1	2	3	1	...	1	...	...	8	...	
Transplantation of muscle	1	...	1	1	...	...	...	...	...	...	...	1	...	
Division of plantar fascia	1	...	1	...	...	1	...	...	...	...	...	1	...	
Suturing quadriceps extensor	1	1	...	...	...	...	...	...	1	...	...	1	...	
Plastic Operations:														
Hare-lip	4	4	...	4	...	...	...	...	...	...	...	3	1	Got fits 6 weeks after operation and died.
Cleft palate	1	...	1	...	1	...	...	...	...	...	...	1	...	
Webbed toes	1	1	...	...	...	...	1	...	...	...	...	1	...	
Operations on Skin and Connective Tissue Systems:														
Incising carbuncle	4	3	1	...	...	...	...	1	...	2	1	4	...	
,, cellulitis	11	7	4	1	1	2	3	4	...	...	...	10	1	Died of septicæmia.
Exploring sinuses	3	3	...	...	...	...	2	1	...	...	...	3	...	
Scraping sinuses, &c.	17	14	3	...	1	3	7	2	2	1	1	17	...	
Scraping and excising lupus	6	2	4	...	1	2	2	...	...	1	...	6	...	
Scraping ulcers	5	5	...	...	...	...	...	1	3	...	1	5	...	
Grafting ulcers	3	3	...	...	...	1	...	...	...	2	...	3	...	
Suture of wounds	7	6	1	1	1	1	2	...	1	1	...	7	...	
Removal of foreign bodies	5	2	3	...	...	3	...	...	...	1	1	5	...	
For ingrowing toe-nail	1	1	...	...	...	...	...	...	1	...	...	1	...	

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TABLE III.—*continued.*

OPERATIONS.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
OPERATIONS ON JOINTS—*contd.*														
Wrenching: foot	3	3	...	...	...	2	1	...	...	...	...	3	...	
Excising semilunar cartilage of knee	1	1	...	...	...	...	1	...	...	...	...	1	...	
Excising cyst of knee joint	1	1	...	...	...	...	1	...	...	...	...	1	...	
Exploration of knee	1	...	1	...	...	...	1	...	...	...	...	1	...	
AMPUTATIONS:														
Hip	1	1	...	...	...	...	...	...	1	...	...	1	...	
Thigh	6	4	2	...	1	...	2	1	1	...	1	4	2	One case that died was suffering from osteomyelitis of femur, the other from compound fracture of femur.
Leg	2	1	1	1	...	...	...	1	...	...	...	2	...	
Syme	3	2	1	2	...	...	1	...	...	...	...	3	...	
Lisfranc	1	1	...	...	...	...	1	...	...	...	...	1	...	
Toe	10	8	2	...	1	4	1	1	2	1	...	10	...	
Shoulder	1	...	1	...	...	...	...	...	1	...	...	...	1	Died of shock, case septicæmic.
Thumb (supernumerary)	1	...	1	1	...	...	...	...	...	...	...	1	...	
Finger	3	1	2	...	...	2	...	...	...	1	...	3	...	
OPERATIONS ON LYMPHATIC SYSTEM:														
Excising glands	20	5	15	...	3	9	3	3	2	...	...	20	...	
Scraping glands	7	4	3	...	1	4	1	1	...	...	...	7	...	

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OPERATIONS ON MUSCLES, TENDONS, &C.														
Excising bursæ	4	1	3	...	...	4	...	...	...	...	...	4	...	
Excising ganglion	1	...	1	...	...	...	1	...	...	...	...	1	...	
For tubercle of tendon sheaths	1	...	1	1	...	...	...	...	...	...	...	1	...	
Tenotomy	8	2	6	1	2	3	1	...	1	...	...	8	...	
Transplantation of muscle	1	...	1	1	...	...	...	...	...	...	...	1	...	
Division of plantar fascia	1	...	1	...	...	1	...	...	...	...	...	1	...	
Suturing quadriceps extensor	1	1	...	...	...	...	...	...	1	...	...	1	...	
PLASTIC OPERATIONS:														
Hare-lip	4	4	...	4	...	...	...	...	...	...	...	3	1	Got fits 6 weeks after operation and died.
Cleft palate	1	...	1	...	1	...	...	...	...	...	...	1	...	
Webbed toes	1	1	...	...	...	...	1	...	...	...	...	1	...	
OPERATIONS ON SKIN AND CONNECTIVE TISSUE SYSTEMS:														
Incising carbuncle	4	3	1	...	...	...	...	1	...	2	1	4	...	
,, cellulitis	11	7	4	1	1	2	3	4	...	...	...	10	1	Died of septicæmia.
Exploring sinuses	3	3	...	...	...	...	2	1	...	...	...	3	...	
Scraping sinuses, &c.	17	14	3	...	1	3	7	2	2	1	1	17	...	
Scraping and excising lupus	6	2	4	...	1	2	2	...	...	1	...	6	...	
Scraping ulcers	5	5	...	...	...	...	...	1	3	...	1	5	...	
Grafting ulcers	3	3	...	...	...	1	...	...	...	2	...	3	...	
Suture of wounds	7	6	1	1	1	1	2	...	1	1	...	7	...	
Removal of foreign bodies	5	2	3	...	...	3	...	...	...	1	1	5	...	
For ingrowing toe-nail	1	1	...	...	...	...	...	...	1	...	...	1	...	

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TABLE IV.—*Table of Infectious Diseases in Surgical Wards during* 1899.

Sex.	Date of admission.	Disease for which admitted.	Hospital disease.	Result and date.
F.	January 1, 1899	Congenital dislocation of hip	Measles	Discharged cured, June 6, 1899
M.	,, 13, ,,	Abscess of thigh.....	,, ...	,, ,, April 1, ,,
F.	,, 19, ,,	Osteitis of femur	,, ...	,, ,, March 16, 1899.
M.	,, 20, ,,	Erysipelas	Erysipelas	,, ,, February 2, 1899.
F.	,, ,, ,,	Ulcer of leg	Measles	,, ,, ,, 23, ,,
F.	,, 27, ,,	Contracted arm	Scarlet fever	Sent to Fever Hospital, April 25, 1899.
F.	February 4, ,,	Tubercular tarsus	,, ,, ...	Discharged cured, April 14, 1899.
M.	May 10, ,,	Mastoid abscess	Erysipelas	,, ,, June 6th, 1899.
M.	June 9, ,,	Phimosis	Scarlet fever	Sent to Fever Hospital, June 11th, 1899.

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REPORT OF CASES IN "ARDEN WARD"

(FOR DISEASES OF WOMEN)

DURING THE YEAR 1899.

By A. R. ROCHE.

* Number of Patients under treatment January 1st, 1899		7
Number of Patients admitted, 1899		76
Total		83

Number of Patients discharged during the year:

Cured or relieved	63	
Unrelieved	7	
		— 70
Died	4	
Under treatment, December 31st, 1899	9	
Total.....	83	

The mortality during the year was 6.02 per cent.

* Arden Ward was closed during several months, whilst the hospital was undergoing extensive alterations.

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Cases in Arden Ward.

Nature of Case.	No. of Case.	Initials.	Age.	Result.	No. in Register.	Remarks, Treatment, &c.
Uterus:						
Subinvolution	1	E. H.	27	Relieved	Z. 33	After labour.
	2	S. S.	22	Relieved	Z. 54	After labour.
	3	M. E.	27	Relieved	Z. 56	After abortion.
	4	E. G.	36	Relieved	Z. 69	After miscarriage.
	5	E. F.	40	Relieved	Z. 70	
	6	L. L.	29	Relieved	Z. 76	Complicated by morbus cordis.
Prolapse.....	1	C. R.	50	Relieved	Z. 36	Retroflexion and retroversion, and ruptured perinæum.
	2	M. C.	64	Improved	Z. 37	
	3	C. S.	52	Relieved	Z. 39	
	4	E. H.	42	Relieved	Z. 43	
	5	G. E.	45	Relieved	Z. 52	
	6	E. L.	48	Relieved	Z. 68	
	7	E. D.	44	Relieved	Z. 88	
Retroflexion	1	L. H.	39	Relieved	Z. 90	
Malignant disease	1	J. I.	52	Unrelieved	Z. 45	
	2	E. K.	46	Unrelieved	Z. 64	
	3	E. S.	42	Unrelieved	Z. 75	Secondary to cervix.
Endometritis	1	E. M.	38	Cured	Z. 51	
Cervix Uteri:						
Malignant disease	1	C. W.	44	Relieved	Z. 29	Only temporary relief; ultimate result unknown.
	II	H.A.W.	43	Death	Z. 82	Disease had involved fundus uteri and peritoneum.
	III	E. K.	28	Unrelieved	Z. 88	

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Hypertrophy of cervix	1	E. G.	19	Cured	Z. 35	Hypertrophy of vaginal portion. Sound passed six inches. Removed with écraseur and cautery.
Polypi	1	F. W.	30	Relieved	Z. 44	
	2	C. C.	42	Cured	Z. 60	Removed.
	3	S. M.	41	Relieved	Z. 85	Removed by écraseur.
	4	J. B.	47	Relieved	Z. 86	Removed. Complicated with metritis.
OVARY:						
Ovaritis	1	E. L.	26	Cured	Z. 19	Prolapsed ovary.
	II	A. H.	35	Relieved	Z. 20	Small vascular cannule of urethra in addition.
	III	C. C.	33	Cured	Z. 24	Prolapsed ovary.
	IV	M. C.	28	Cured	Z. 62	Prolapsed ovary.
	V	K. C.	19	Relieved	Z. 73	Vulvitis, ovaritis, vaginitis, salpingitis.
	VI	L. F.	19	Relieved	Z. 18	
Tumours	I	S. W.	28	Cured.	Z. 40	Unilocular cyst. Ligature of pedicle slipped and re-tied.
	II	M.A.G.	50	Cured.	Z. 42	Multilocular cyst.
	III	H. F.	29	Cured.	Z. 81	Unilocular cyst.
	IV	M. F.	68	Cured.	Z. 89	Multilocular cyst and ascites.
	V	J. W.	47	Cured.	Z. 92	Multilocular ovarian cyst. Previously "tapped" by a general practitioner.
VAGINA:						
Carcinoma.....	I	F. B.	73	Relieved	Z. 14	Epitheliomatous growth on wall near orifice. Removed with cautery.
VULVA:	I	H. H.	30	Relieved	Z. 67	Cyst of Bartholin's gland. Incised.
	II	A. B.	36	Relieved	Z. 77	Labial ulcers.
	III	M. G.	33	Cured	Z. 79	Labial abscess.

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Cases in Arden Ward—*continued.*

Nature of Case.	No. of Case.	Initials.	Age.	Result.	No. in Register.	Remarks, Treatment, &c.
Bladder, Urethra, &c.:						
Retention of urine	I	L. C.	63	Relieved	Z. 41	
Disorders of Menstruation:						
Menopause	I	S. M.	53	Relieved	Z. 22	
	II	F. B.	47	Relieved	Z. 26	
Dysmenorrhœa	I	J. F.	23	Relieved	Z. 25	Elongation of cervix. Removed by écraseur.
	II	E. H.	22		Z. 74	Cervix incised with metrotome.
	III	A. H.	18	Unrelieved	Z. 84	Menorrhagia, dilatio chordis, chlorosis.
Metrorrhagia	I	F. R.	23	Relieved	Z. 28	
Disorders of Pregnancy:						
Albuminuria.....	I	M.A.E.	38	Unrelieved	Z. 23	Six months pregnant.
Thrombosis of veins during pregnancy ...	I	E. F.	31	Relieved	Z. 32	
Contracted pelvis	I	C. H.	28		Z. 34	8th month of pregnancy. Labour induced. Child born dead.
	II	L. D.	30		Z. 65	7th month of pregnancy. Labour induced. Child born dead.
Puerperal fever	I	E. L.	32	Cured	Z. 38	
	II	S. B.	25	Cured	Z. 53	
Retained placenta	I	F. L.	42	Relieved	Z. 49	Large mass of placental tissue removed.
	II	A. G.	27	Cured	Z. 57	

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Chorea	I	K. C.	28	Death	Z. 61	Eight months pregnant. Choreic movements very violent. Labour came on. Child born dead. Mother died three days later.
PELVIS:						
Pelvic peritonitis	I	A. H.	30	Cured	Z. 27	
	II	E. W.	36	Cured	Z. 55	Abscess opened by sinuses forming.
	III	S. F.	21	Cured	Z. 63	
Pelvic cellulitis	I	L. L.	22	Relieved	Z. 31	Abscess formed and burst into vagina.
	II	F. R.	29	Cured	Z. 48	
	III	N. A.	19	Unrelieved	Z. 50	Patient discharged herself.
	IV	J. D.	29	Cured	Z. 58	
	V	E. B.	41	Cured	Z. 59	
	VI	E. W.	29	Cured	Z. 71	
	VII	E. T.	24	Cured	Z. 72	
	VIII	E. T.	40	Cured	Z. 91	Abscess formed, and opened by a puncture.
UNCLASSIFIED CASES:						
Malignant growth in abdomen	I	A. O.	56	Death	Z. 30	Omental growth and ascites. Abdomen drained.
Bronchitis	II	M. W.	42	Cured	Z. 46	
Salpingitis	III	A. F.	30	Relieved	Z. 47	
Malignant growth in abdomen	IV	A. H.	57		Z. 66	Transferred to East Extras for operation.
Chronic constipation	V	F. H.	23	Relieved	Z. 78	
Influenza	VI	C. C.	44	Relieved	Z. 80	
Tubercular peritonitis	VII	M. A.	21	Relieved	Z. 83	Patient remained in hospital till February, 1901.

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MEDICAL REGISTRAR'S REPORT FOR THE YEAR 1900.

Number of Patients in Medical Wards, on Dec 31st, 1899...		62
Admitted to Medical Wards in 1900		960
Total		1,022
Of these—		
Males	514	
Females	508	
Recovered or relieved		743
Males	350	
Females	393	
Unrelieved, including those transferred to Surgical or Obstetric Wards, Fever Hospital or Infirmary, and those who left Hospital against advice		109
Males	65	
Females	44	
Died		170
Males	99	
Females	71	
Number remaining in Medical Wards on Dec. 31st, 1900 ...		75

Average stay in hospital of each patient ... 24.7 days.
Mortality during the year ... ... 16.65 per cent.

H. THOMPSON BARRON, M.D., L.R.C.P.
Medical Registrar.

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TABLE A.

DISEASE.	Jan. to March	April to June.	July to Sept.	Oct. to Dec.	Sex. Males.	Females.	Total.	Age. Under 5 yrs.	5—10	10—20.	20—30.	30—40.	40—50.	50—60.	Over 60.	Result. Died. M	F	Unrelieved. M	F	Relieved. M	F
GENERAL DISEASES:																					
Group A:																					
Enteric fever	11	3	6	12	18	14	32	4	4	9	11	3	...	1	...	5	2	...	...	13	12
Measles	1	4	1	...	3	3	6	1	2	...	2	1	...	...	...	...	...	...	...	3	3
Diphtheria	...	1	1	2	4	...	4	3	1	...	...	...	...	...	...	...	...	1	...	3	...
Influenza	3	1	2	7	4	9	13	...	1	5	2	4	1	...	...	...	...	...	...	4	9
Erysipelas	2	1	2	2	2	5	7	2	1	1	...	1	...	1	1	1	1	...	...	1	4
Malaria	...	...	1	...	1	...	1	...	...	...	1	...	...	...	...	...	...	...	...	1	...
Pyæmia	2	...	...	...	1	1	2	...	...	...	1	...	...	1	...	1	1	...	...	...	...
Group B:																					
Poisoning: alcohol	1	1	3	1	5	1	6	...	...	...	3	2	1	...	...	...	...	...	...	5	1
„ atropine	...	2	...	...	1	1	2	1	...	...	...	1	...	...	...	...	...	...	...	1	1
„ carbon disulphide	...	...	1	...	...	1	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1
Group C:																					
Marasmus	3	2	5	2	6	6	12	12	...	...	...	...	...	...	...	3	3	...	...	3	3
Syphilis: congenital	2	1	...	...	1	2	3	3	...	...	...	...	...	...	...	1	...	...	...	...	2
Tuberculosis: general	1	3	3	1	4	4	8	3	3	2	...	...	...	...	...	3	4	1	...	...	...
Rheumatism: acute	9	7	5	8	12	17	29	...	1	10	9	5	2	1	1	...	...	...	...	12	17
„ sub-acute	8	6	11	7	13	19	32	...	2	14	9	5	2	...	...	...	...	...	...	13	19
„ chronic	3	...	3	...	5	1	6	...	...	...	...	1	4	1	...	...	...	1	5	...	...
Gonorrhœal arthritis	...	1	1	...	..	2	2	...	...	...	1	...	1	...	...	...	...	...	...	...	2
Osteo-arthritis	...	2	3	1	...	6	6	...	...	..	1	...	2	3	...	...	...	1	...	5	
Gout	...	2	1	...	3	...	3	...	...	...	..	1	1	...	1	...	...	...	...	3	...
Rickets	...	3	2	...	4	1	5	5	...	...	...	...	...	...	...	...	...	1	...	3	1
Scurvy	...	1	...	...	1	...	1	...	...	...	...	...	...	1	...	...	...	...	...	1	...
Anæmia	8	2	5	6	3	18	21	1	...	12	4	2	1	1	...	...	...	...	...	3	18
Pernicious anæmia	1	1	...	...	1	1	2	...	...	...	..	...	1	1	...	1	...	...	1	...	...
Leucocythæmia	2	...	...	...	...	2	2	...	...	2	...	...	...	...	...	...	...	...	...	...	2
Purpura	...	...	1	...	1	...	1	1	...	...	...	...	...	...	...	...	...	1	...	...	...
Peliosis rheumatica	1	...	...	...	1	...	1	...	...	...	1	...	...	...	...	...	...	...	...	1	...
Diabetes mellitus	4	3	4	...	8	3	11	...	...	4	1	2	2	2	...	4	...	2	2	2	1
Glycosuria	...	...	1	...	1	...	1	...	...	...	...	...	...	1	...	...	...	...	...	1	...
Debility	2	...	...	1	2	1	3	...	1	...	1	...	...	1	...	...	...	1	...	1	1
DISEASES OF THE NERVOUS SYSTEM:																					
Brain:																					
Aphasia	1	...	...	1	...	2	2	...	...	...	...	1	1	...	...	...	...	...	...	...	2
Meningitis	1	1	1	...	2	1	3	...	1	1	...	1	...	...	...	1	...	...	1	1	...
„ posterior basal	4	...	2	...	2	4	6	6	...	...	...	...	...	...	...	2	4	...	...	...	...
„ tubercular	1	1	...	...	1	1	2	1	...	...	...	1	...	...	...	1	1	...	...	...	...
„ syphilitic	2	...	...	...	1	1	2	...	...	...	...	2	...	...	...	...	...	...	...	1	1

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TABLE A—*continued.*

DISEASE.	Jan. to March.	April to June.	July to Sept.	Oct. to Dec.	Sex. Males.	Females.	Total.	Age. Under 5 yrs.	5—10.	10—20.	20—30.	30—40.	40—50.	50—60.	Over 60.	Result. Died. M	Died. F	Unrelieved. M	Unrelieved. F	Relieved. M	Relieved. F
DISEASES OF THE NERVOUS SYSTEM—*continued.*																					
Brain—contd.																					
Meningitis: cerebro-spinal	...	1	...	..	1	...	1	...	...	1	...	...	...	...	...	1	...	...	...	...	...
Cerebral hæmorrhage	1	1	1	1	3	1	4	...	...	...	...	...	3	1	...	3	1	...	...	...	...
„ thrombosis	...	...	1	...	1	...	1	...	...	...	1	...	...	...	...	...	...	1	...	...	...
Hemiplegia	...	...	1	...	...	1	1	...	...	...	...	...	1	...	...	...	...	...	...	...	1
Hydrocephalus	1	2	1	...	3	1	4	3	...	...	1	...	...	...	...	2	1	1	...	...	...
Paralysis agitans	1	1	...	...	2	...	2	...	...	...	...	...	...	2	...	...	...	2	...	...	...
Chorea	6	9	4	4	10	13	23	...	15	8	...	...	...	...	...	...	...	...	1	10	12
Convulsions	2	2	1	1	3	3	6	3	2	...	1	...	...	...	...	...	...	...	...	3	3
Epilepsy	1	1	1	1	2	2	4	...	...	1	2	...	...	...	1	...	...	...	...	2	2
General paralysis	2	...	1	...	3	...	3	...	...	...	1	...	2	...	...	...	...	3	...	...	...
Cyst of cerebellum	...	...	1	...	1	...	1	...	...	...	...	...	1	...	...	1	...	...	...	...	...
Cord:																					
Myelitis: acute	...	...	1	...	1	...	1	...	...	1	...	...	...	...	...	1	...	...	...	...	...
„ chronic	1	...	...	...	1	...	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...
Anterior polio-myelitis	...	3	3	...	3	3	6	3	1	2	...	...	...	...	...	...	...	2	1	1	2
Caisson disease	...	...	1	...	1	...	1	...	...	...	...	...	...	1	...	...	...	1	...	...	...
Landry's paralysis	...	1	...	1	1	1	2	...	...	1	...	...	1	...	...	1	1	...	...	...	...
Spastic paraplegia	...	2	1	...	3	...	3	...	...	...	...	...	1	2	...	...	...	3	...	...	...
Tabes	2	2	...	...	4	...	4	...	...	...	...	1	1	2	...	...	...	1	...	3	...
Disseminated sclerosis	1	...	1	1	1	2	3	...	...	1	...	1	1	...	...	...	...	1	2	...	...
Tumour of cord	...	1	...	...	1	...	1	...	...	...	...	...	...	1	...	...	...	1	...	...	...
Progressive muscular atrophy	1	...	...	...	1	...	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...
Bulbar paralysis	...	...	...	1	1	...	1	...	...	...	...	...	1	...	...	...	...	1	...	...	...
Nerves:																					
Multiple neuritis	...	...	2	...	2	...	2	...	...	...	1	...	...	1	...	...	...	...	...	2	..
„ „ alcoholic	2	1	1	2	1	5	6	...	...	...	1	2	2	1	...	...	...	1	...	...	5
„ „ diphtherial	...	...	...	1	1	...	1	...	1	...	...	...	...	...	...	...	...	...	...	1	...
„ „ saturnine	1	...	...	...	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...	1	...
Brachial neuritis	1	...	1	...	2	...	2	...	...	...	...	...	1	1	...	...	...	...	...	2	...
Optic neuritis (Quincke's disease)	1	...	...	...	1	...	1	.	1	...	...	...	...	...	...	...	...	...	...	1	...
Neuralgia	1	1	1	...	2	1	3	...	...	1	1	...	1	...	...	...	...	...	..	2	1
Sciatica	2	2	1	2	5	2	7	...	...	1	4	...	...	...	2	...	...	1	...	4	2
Facial paralysis	...	...	1	...	1	...	1	...	...	...	...	1	...	...	...	...	...	...	...	1	...
Headache	1	1	1	1	3	1	4	...	...	1	2	...	...	1	...	...	...	...	...	3	1
Various:																					
Hysteria	5	3	5	2	5	10	15	...	...	2	9	1	...	1	2	...	...	...	3	5	7
Hysterical aphonia	..	...	2	...	...	2	2	...	...	...	2	...	...	...	...	...	...	...	...	...	2
Neurasthenia	1	1	1	...	1	2	3	...	...	...	...	3	...	...	...	...	...	...	...	1	2
Delirium tremens	2	1	...	...	3	...	3	...	...	...	1	1	1	...	...	...	...	...	...	3	...

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TABLE A—*continued.*

DISEASE.	Jan. to March.	April to June.	July to Sept.	Oct. to Dec.	Sex: Males.	Sex: Females.	Sex: Total.	Age: Under 5 yrs.	Age: 5—10.	Age: 10—20.	Age: 20—30.	Age: 30—40.	Age: 40—50.	Age: 50—60.	Age: Over 60.	Result: Died. M	Result: Died. F	Result: Unrelieved. M	Result: Unrelieved. F	Result: Relieved. M	Result: Relieved. F
DISEASES OF THE NERVOUS SYSTEM—*continued.*																					
Various:																					
Dementia	...	1	...	...	1	...	1	...	...	...	...	...	...	..	1	...	...	1	...	...	...
Hypochondriasis	...	...	1	1	1	1	2	...	...	...	...	1	1	...	...	...	...	...	1	1	...
Melancholia	1	...	...	...	1	...	1	...	...	1	...	...	...	...	...	...	...	1	...	...	...
Spasmodic torticollis	1	...	...	...	...	1	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1
Hemicrania	...	...	1	...	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1
Myalgia	...	2	1	...	3	...	3	...	...	...	3	...	...	...	...	...	...	...	...	3	...
Pseudo-hypertrophic muscular paralysis	...	1	...	...	1	...	1	...	1	...	...	...	...	...	...	...	...	1	...	...	...
DISEASES OF THE CIRCULATORY SYSTEM:																					
Endocarditis	1	...	3	...	1	3	4	...	...	...	3	...	1	...	...	1	3	...	...	...	...
Angina pectoris	1	1	...	...	2	...	2	...	...	...	...	...	...	1	1	2	...	...	...	...	...
Mitral disease	13	12	16	10	18	33	51	...	6	12	5	10	11	6	1	1	5	3	1	14	27
Aortic disease	2	4	3	3	11	1	12	...	...	1	4	3	3	...	1	3	...	1	...	7	1
Mitral and aortic disease	3	5	1	6	13	2	15	...	2	2	3	3	3	2	...	5	2	1	...	7	...
Congenital heart disease	...	2	1	...	2	1	3	2	1	...	...	...	...	...	...	...	...	...	...	2	1
Cardiac failure	4	1	2	2	5	4	9	...	...	2	1	2	3	1	...	2	4	...	...	3	...
Pericarditis	1	...	1	...	1	1	2	...	...	2	...	...	...	...	...	1	...	...	...	...	1
Aortic aneurysm	1	...	...	2	2	1	3	...	...	...	...	...	3	...	...	...	...	...	...	2	1
Phlebitis	1	...	...	...	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1
Œdema (? cause)	2	1	...	...	3	...	3	...	..	...	...	...	1	2	...	...	...	1	...	2	...
Venous thrombosis	1	1	...	1	...	3	3	...	...	...	...	1	2	...	...	...	...	...	...	...	3
DISEASES OF THE RESPIRATORY SYSTEM:																					
Laryngitis: chronic	1	...	...	...	1	...	1	...	...	...	...	1	...	...	...	...	...	...	...	1	...
Laryngeal tuberculosis	...	...	1	...	...	1	1	...	...	...	...	...	1	...	...	...	...	...	1	...	...
Bronchitis: acute	7	7	10	14	16	22	38	26	2	3	3	1	...	3	...	...	1	..	1	16	20
„ chronic	8	1	2	2	8	5	13	...	...	..	1	1	4	4	3	...	...	...	...	8	5
Bronchiectasis	...	...	1	1	2	...	2	...	...	...	...	1	...	1	...	...	...	1	...	1	...
Pneumonia: lobar	14	23	16	7	44	16	60	10	11	13	7	9	7	3	...	10	1	...	...	34	15
„ lobular	8	12	3	10	17	16	33	30	2	1	...	...	...	...	...	8	4	...	...	9	12
Phthisis	16	16	14	5	37	14	51	1	2	3	12	16	11	4	2	4	6	17	2	16	6
Emphysema	1	1	1	2	4	1	5	...	...	1	1	1	1	...	1	...	...	...	...	4	1
Asthma	1	...	...	1	2	...	2	...	...	...	...	1	1	...	...	...	...	...	...	2	...
Pleurisy: simple	5	5	4	...	8	6	14	1	1	4	3	4	...	1	...	...	...	1	...	7	6
„ effusive	6	3	..	3	8	4	12	...	1	1	3	4	1	2	...	...	...	...	...	8	4
Empyema	3	1	2	1	2	5	7	5	...	...	2	...	...	...	...	1	2	1	1	...	2
Gangrene of lung	...	1	...	...	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1
Pneumothorax	...	...	...	1	1	..	1	...	...	...	1	...	...	...	...	...	...	...	...	1	...
Dyspnœa	1	...	...	...	...	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	1

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TABLE A—*continued.*

DISEASE.	Jan. to March.	April to June.	July to Sept.	Oct. to Dec.	Sex. Males.	Females.	Total.	Age. Under 5 yrs.	5—10.	10—20.	20—30.	30—40.	40—50.	50—60.	Over 60	Results. Died. M	Died. F	Unrelieved. M	Unrelieved. F	Relieved. M	Relieved. F
DISEASES OF THE DIGESTIVE SYSTEM:																					
A.																					
Stomatitis	1	...	...	...	...	1	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1
Tonsillitis	1	5	4	5	3	12	15	...	4	2	6	3	...	...	...	...	...	...	...	3	12
Pharyngitis	...	1	...	1	...	2	2	..	...	1	1	...	...	...	...	...	...	...	...	...	2
Parotitis	1	...	...	...	1	...	1	..	...	...	...	...	...	...	1	...	...	...	...	1	...
Œsophagus: stricture	...	...	...	1	1	...	1	...	...	...	...	...	1	...	...	...	...	1	...	...	...
„ spasm	...	1	...	...	...	1	1	...	...	...	...	...	1	...	...	...	...	..	...	...	1
„ malignant disease	...	...	2	1	2	1	3	...	...	...	...	1	1	...	1	1	1	1	...	...	...
Gastralgia	1	1	...	1	3	...	3	...	...	...	1	1	...	...	1	...	...	...	...	3	...
Gastritis	2	3	5	2	3	9	12	...	...	...	6	5	1	...	...	...	...	...	...	3	9
Gastric ulcer	7	8	11	8	1	33	34	...	...	7	16	10	...	...	1	...	...	...	1	1	32
„ carcinoma	3	2	4	1	4	6	10	...	...	...	...	1	3	3	3	3	2	1	4	...	...
„ dilatation	1	1	1	...	3	...	3	...	..	...	...	...	1	1	1	...	...	...	...	3	...
Dyspepsia	3	4	2	4	4	9	13	...	...	1	8	1	2	1	...	...	..	1	...	3	9
Duodenal ulcer	1	...	...	...	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1
Diarrhœa	2	1	20	5	13	15	28	23	...	1	...	2	1	1	...	5	4	...	...	8	11
Constipation	...	5	7	2	5	9	14	5	4	2	2	...	1	...	...	...	...	...	...	5	9
Enteritis	1	...	1	2	2	2	4	2	1	...	...	1	...	...	...	...	1	...	...	2	1
Intestinal tuberculosis	...	...	1	...	...	1	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...
Appendicitis	...	4	4	3	5	6	11	...	...	7	2	2	...	...	...	...	...	...	...	5	6
Mucous colitis	1	1	1	...	2	1	3	...	...	1	1	...	...	1	...	...	...	...	...	2	1
Ulcerative colitis	...	...	1	...	1	...	1	...	...	...	...	1	...	...	...	1	...	...	...	...	...
Dysentery	...	...	2	...	2	...	2	...	1	...	...	...	1	...	...	1	...	...	...	1	...
Malignant disease of intestine	1	2	...	1	2	2	4	...	...	...	...	1	...	1	2	2	2	...	...	...	...
Hæmorrhage from rectum	...	...	...	1	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1
B.																					
Jaundice	...	...	2	...	...	2	2	...	...	1	1	...	...	...	...	...	...	...	...	...	2
Liver: cirrhosis	6	2	3	2	5	8	13	...	...	..	...	1	7	5	...	2	2	...	2	3	4
„ malignant disease	...	2	...	...	...	2	2	...	...	...	...	1	...	1	...	...	1	...	1	...	...
„ syphilitic „	1	...	...	...	1	...	1	...	...	...	...	...	1	...	...	...	...	1	...	...	...
„ lardaceous „	...	1	...	...	1	...	1	...	...	...	...	...	1	...	...	1	...	...	...	...	...
Gall-stones	2	2	...	...	1	3	4	...	...	1	...	1	2	...	...	...	...	...	...	1	3
Malignant disease of gall bladder	...	...	...	1	...	1	1	...	...	...	...	...	...	1	...	...	...	...	1	...	...
Hepatitis	...	...	1	...	...	1	1	...	...	...	...	...	...	...	1	...	1	...	...	...	..
Suppurative pylephlebitis	1	...	...	...	...	1	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...
Sub-phrenic abscess	...	...	...	1	...	1	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...
Malignant disease of pancreas	...	...	1	...	...	1	1	...	...	...	...	...	1	...	...	...	...	...	1	...	...
Malignant disease of omentum	...	...	...	1	...	1	1	...	...	...	...	...	...	...	1	...	...	...	1	...	...
Peritonitis: suppurative	...	...	...	1	...	1	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...
„ tubercular	1	...	4	2	5	2	7	2	2	1	1	1	...	...	...	2	1	...	...	3	1
„ chronic	1	...	...	...	...	1	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...

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TABLE A—*continued.*

DISEASE.	Jan. to March.	April to June.	July to Sept.	Oct. to Dec.	Sex. Males.	Sex. Females.	Sex. Total.	Age. Under 5 yrs.	Age. 5—10.	Age. 10—20.	Age. 20—30.	Age. 30—40.	Age. 40—50.	Age. 50—60.	Age. Over 60.	Result. Died. M	Result. Died. F	Result. Unrelieved. M	Result. Unrelieved. F	Result. Relieved. M	Result. Relieved. F
DISEASES OF THE DIGESTIVE SYSTEM—*continued.*																					
Ascites	...	2	1	...	1	2	3	...	...	...	...	...	1	2	...	...	...	1	2	...	...
Abdominal tumour	...	1	...	...	...	1	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...
DISEASES OF GLANDS:																					
Hodgkin's disease	...	...	...	1	...	1	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...
Myxœdema	...	1	...	...	...	1	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1
Cretinism	1	...	...	...	...	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	1
Exophthalmic Goître	3	...	1	...	...	4	4	...	...	...	2	2	...	...	...	...	...	1	...	...	3
Addison's disease	1	1	...	...	2	...	2	...	...	2	...	...	...	...	...	2	...	...	...	...	...
DISEASES OF THE URINARY SYSTEM:																					
Acute nephritis	1	1	...	2	4	..	4	...	1	1	...	2	...	...	...	...	...	...	...	4	...
Chronic Bright's	10	3	2	...	7	8	15	...	1	4	5	1	3	1	...	2	1	...	2	5	5
Granular kidney	3	4	4	2	12	1	13	...	...	...	...	2	3	5	3	3	1	2	...	7	...
Pyelitis	1	...	...	...	...	1	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...
Moveable kidney	...	1	...	...	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1
Cystitis	...	...	1	...	...	1	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...
Albuminuria	...	1	...	...	...	1	1	...	...	...	...	...	...	1	...	...	...	...	...	...	1
Hæmaturia	1	...	1	1	2	1	3	...	1	1	...	...	1	...	...	...	...	...	...	2	1
Uræmia	1	...	1	1	3	...	3	...	...	...	...	1	1	1	...	3	...	...	...	...	...
DISEASES OF THE SKIN:																					
Eczema	...	...	...	1	1	...	1	...	...	...	...	1	...	...	...	...	...	...	...	1	...
Erythema nodosum	2	1	3	...	3	3	6	1	2	1	1	...	1	...	...	...	...	...	...	3	3
Herpes	1	...	...	...	...	1	1	...	...	1	...	...	...	...	...	...	...	...	...	...	1
Impetigo contagiosa	1	...	...	...	...	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	1
Pemphigus	...	1	1	...	...	2	2	...	...	...	...	...	...	2	...	...	1	...	...	...	1
Sebaceous cyst	...	...	...	1	...	1	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1
VARIOUS:																					
Coxalgia	...	...	...	1	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1
Ganglion of wrist	...	...	...	1	...	1	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1
Gluteal abscess	...	1	...	...	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1
Heat-stroke	...	...	3	...	1	2	3	1	1	...	1	...	...	...	...	...	1	...	...	1	1
Nil	2	1	1	4	4	4	8	2	1	1	1	2	...	1	...	...	...	...	...	4	4
Otorrhœa	...	...	1	...	1	...	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...
Ovarian cyst	...	1	...	...	...	1	1	...	...	...	...	...	...	1	...	...	1	...	...	...	...
Pelvic peritonitis	...	...	1	...	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1
Phagedæna	...	...	...	1	1	...	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...
Pharyngeal polypus	...	1	...	...	...	1	1	...	...	1	...	...	...	...	...	...	...	1	...	...	...
Pregnancy	...	...	1	...	...	1	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...
Scald	1	...	...	...	1	...	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...
Septic wound of wrist	1	...	...	...	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1
Tape-worm	...	...	1	...	...	1	1	...	...	1	...	...	...	...	...	...	...	...	...	...	1
Varicose ulcers	2	...	...	...	...	2	2	...	...	...	...	...	...	2	...	...	...	1	...	1	...

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SURGICAL REGISTRAR'S REPORT FOR THE YEAR, 1900.

By E. CANNY RYALL, F.R.C.S.I.

The total number of cases under treatment in the Surgical Wards during the past year was 1,038, viz.:—

	Males	Females.	Total.
Remaining in Hospital, December 31st, 1899...	19	18	37
Admitted during the year 1900...	610	391	1,001
	629	409	1,038
Of these there were:—			
Discharged, cured, or relieved	542	344	886
Died	45	23	68
In hospital, December 31st, 1900	42	42	84
	629	409	1,038

The percentage of deaths during the year has been 6·55.

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Statistical Tables of Diseases, Injuries, and Operations, with a Table of Infectious Diseases admitted into or occurring in the Surgical Wards during 1900.

TABLE I.—DISEASES.

DISEASES.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
GENERAL DISEASES:														
Septicæmia	2	1	1	...	...	2	...	...	...	...	...	...	2	
Gangrene, diabetic	3	1	2	...	...	...	1	...	...	2	...	2	1	
,, puerperal	1	...	1	...	...	...	1	...	...	...	...	1	...	
,, senile	4	4	...	...	...	...	...	...	2	...	2	2	2	Both cases died of exhaustion.
VENEREAL DISEASE:														
Syphilis, congenital	2	1	1	...	1	1	...	...	...	...	...	2	...	
,, acquired	4	3	1	...	...	...	2	1	1	...	...	4	...	
Chancroids	1	1	...	...	...	...	1	...	...	...	...	1	...	
LOCAL DISEASES:														
Tumours:														
Epithelioma of—														
Tongue	4	4	...	...	...	...	...	1	...	2	1	4	...	
Palate	2	2	...	...	...	...	...	...	2	...	...	1	1	Died of syncope in bath.
Glands of neck (recurrent)	2	2	...	...	...	...	...	...	...	2	...	2	...	
Œsophagus	4	4	...	...	...	...	...	...	...	3	1	...	4	All died of exhaustion; one case had gastrostomy performed, another tracheotomy.
Labium majus	1	...	1	...	...	...	...	...	...	...	1	1	...	
Rodent ulcer (face)	3	3	...	...	...	...	...	...	1	...	2	2	1	Died of heart failure.
Carcinoma:														
Breast	15	...	15	...	...	...	...	1	4	2	8	14	1	Died of bronchitis.
Breast (recurrent)	1	...	1	...	...	...	...	1	...	...	...	1	...	

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Stomach	3	2	1	...	...	...	...	...	1	1	1	...	3	All died of exhaustion ; two cases had gastro-jejunostomy performed.
Colon	2	1	1	...	...	...	...	...	...	1	1	...	2	One case died of intestinal obstruction, the other of exhaustion after colotomy.
Rectum	5	2	3	...	...	...	...	...	1	1	3	5	...	
Uterus	3	...	3	...	...	...	1	...	...	...	2	3	...	
Sarcoma :														
Skin	1	1	..	...	...	...	...	...	...	1	...	1	...	
Cervical glands	3	1	2	...	...	2	1	...	...	...	...	2	1	Died of exhaustion from dissemination of the disease.
Superior maxilla	1	1	...	...	...	1	...	...	...	...	...	1	...	
Scapula	2	...	2	...	...	...	...	...	2	...	...	2	...	
Femur	2	1	1	...	...	...	1	...	1	...	...	2	...	
Foot	1	1	...	...	...	...	...	...	...	...	1	1	...	
Kidney	1	1	...	...	...	...	...	...	1	...	...	1	...	
Breast	1	...	1	...	...	...	...	...	1	...	...	1	...	
Testicle	1	1	...	...	...	...	1	...	...	...	...	1	...	
Cysts :														
Dermoid	2	...	2	...	...	...	2	...	...	...	...	2	...	
Sebaceous	4	1	3	...	...	...	1	...	1	2	...	4	...	
Serous	5	2	3	1	...	...	...	1	3	...	...	5	...	
Papillomatous (breast)	1	...	1	...	...	...	...	...	1	...	...	1	...	
Ovarian	2	...	2	...	...	...	...	...	1	...	1	2	...	
Other Tumours :														
Granuloma	1	1	...	...	...	...	...	...	...	1	...	1	...	
Fibroma	3	...	3	...	...	...	2	...	1	...	...	3	...	
Fibro-adenoma	1	...	1	...	...	...	1	..	...	...	...	1	...	
Fibro-neuroma	1	...	1	...	...	1	...	...	...	...	...	1	...	
Fibro-myoma	1	...	1	...	...	...	...	...	1	...	...	1	...	
Lipoma	3	...	3	...	1	1	...	1	...	...	...	3	...	
Enchondroma	1	...	1	...	...	1	...	...	...	...	...	1	...	
Exostosis	4	3	1	...	1	2	1	...	...	...	...	4	...	
Angioma	9	2	7	5	...	1	3	...	...	...	...	9	...	

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TABLE I.—*continued.*

DISEASES.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
MALFORMATIONS AND DEFORMITIES:														
Cleft palate	4	3	1	3	1	...	...	...	...	...	...	4	...	
Hare lip	4	4	...	4	...	...	...	...	...	...	...	4	...	
Torticollis	5	...	5	...	4	1	...	...	...	...	...	4	1	Died of suppurative meningitis.
Contracted finger	1	...	1	...	...	...	1	...	...	...	...	1	...	
Dupuytren's contraction	5	4	1	...	...	1	...	...	...	3	1	5	...	
Hammer toe	4	2	2	...	...	1	2	1	...	...	...	4	...	
Hallux valgus	2	...	2	...	...	1	1	...	...	...	...	2	...	
Flat-foot	4	2	2	...	...	...	2	...	1	1	...	4	...	
Enlargement of heads of 5th metatarsals	1	1	...	...	...	1	...	...	...	...	...	1	...	
Talipes	3	3	...	3	...	...	...	...	...	...	...	3	...	
Genu valgum	5	1	4	...	2	2	1	...	...	...	...	5	...	
Contraction of leg	4	2	2	1	...	1	1	1	...	...	...	4	...	
Congenital deformity of legs	1	...	1	...	...	1	...	...	...	...	...	1	...	
Congenital dislocation of hip	1	...	1	...	1	...	...	...	...	...	...	1	...	
Spasm of muscles of hip	1	1	...	...	...	...	...	...	1	...	...	1	...	
Lateral curvature of spine	4	...	4	1	...	3	...	...	...	...	...	4	...	
DISEASES OF THE NERVOUS SYSTEM:														
Sciatica	1	1	...	...	...	...	..	1	...	...	...	1	...	
Infantile palsy	2	...	2	...	1	1	...	...	...	...	...	2	...	
Spina bifida (ruptured)	1	...	1	1	...	...	...	...	...	...	...	...	1	Died of septic meningitis.
Epilepsy	2	2	...	...	...	...	1	1	...	...	...	2	...	
Suppurative meningitis	1	...	1	...	...	...	...	1	...	...	...	...	1	
Heat-stroke	1	1	...	...	...	...	1	...	...	...	...	1	...	

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Diseases of the Eyelids and Eye:													
Meibomian cyst	1	1	...	...	...	...	...	...	1	...	...	1	...	
Keratitis	3	1	2	..	...	2	...	...	1	...	...	3	...	
Iritis	1	...	1	...	...	...	...	...	1	...	...	1	...	
Cataract	3	3	...	...	...	2	...	...	...	...	1	3	...	
Glaucoma	1	..	1	...	...	...	...	...	...	...	1	1	...	
Detachment of retina	1	1	...	...	...	...	...	1	...	...	...	1	...	
Diseases of the Ear:													
Suppurative otitis media	2	...	2	1	...	...	...	...	...	1	...	2	...	
Exostosis	1	...	1	...	...	1	...	...	...	...	...	1	...	
Diseases of the Nose:													
Hypertrophied turbinals	1	...	1	...	...	1	...	...	...	...	...	1	...	
Deviated septum	3	1	2	...	1	1	1	...	...	...	...	3	...	
Nasal stenosis	1	...	1	...	...	1	...	...	...	...	...	1	...	
Polypi	3	2	1	...	...	1	...	2	...	...	...	3	...	
Diseases of the Pharynx:													
Tonsillitis	1	1	...	1	...	...	...	...	...	...	...	1	...	
Enlarged tonsils	7	1	6	2	4	1	...	...	...	...	...	7	...	
Adenoids	25	11	14	7	11	7	...	...	...	...	...	25	...	
Diseases of the Thyroid:													
Cystic enlargement	4	...	4	...	...	2	1	...	...	...	1	4	...	
Diseases of Chest:													
Empyema	6	5	1	...	...	2	2	2	...	...	...	5	1	Died of exhaustion.
Pneumonia	1	1	...	...	...	...	1	...	...	...	...	1	...	

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TABLE I.—*continued.*

DISEASES.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
DISEASES OF THE VASCULAR SYSTEM:														
Veins:														
Varicose	36	22	14	...	...	4	17	8	6	1	...	36	...	
Varicocele	15	15	...	...	...	5	9	1	...	...	...	15	...	
Thrombosis	2	...	2	...	...	...	...	1	...	1	...	2	...	
Arteries:														
Popliteal aneurism	1	1	...	...	...	...	...	...	...	1	...	1	...	
DISEASES OF THE LYMPHATIC SYSTEM:														
Lymphangitis	3	3	...	...	...	...	1	1	1	...	...	3	...	
Inflamed glands	9	5	4	...	...	4	3	2	...	...	...	9	...	
Tuberculous glands	36	19	17	3	6	15	7	2	2	1	...	36	...	
Lymphadenoma	1	...	1	...	...	...	...	...	1	...	...	1	...	
DISEASES OF THE DIGESTIVE SYSTEM, &c.:														
Mouth and Tongue:														
Ulcerative stomatitis	2	...	2	2	...	...	...	...	...	...	...	2	...	
Carious teeth	1	...	1	...	...	...	1	...	...	...	...	1	...	
Hæmorrhage from gums	1	...	1	...	...	...	1	...	...	...	...	1	...	
Chronic superficial glossitis	1	...	1	...	...	...	...	...	1	...	...	1	...	
Œsophagus:														
Stricture	3	3	...	...	...	...	...	1	...	1	1	3	...	

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Stomach:														
Foreign body in	1	...	1	...	...	...	...	...	1	...	...	1	...	
Dyspepsia	1	1	...	...	...	...	...	...	...	1	...	1	...	
Gastric ulcer	2	...	2	...	...	...	1	1	...	...	...	2	...	
Perforated gastric ulcer	2	2	...	...	...	...	...	1	...	1	...	...	2	Both cases died of acute peritonitis.
Pyloric stenosis	3	2	1	...	...	...	...	1	1	1	...	1	2	One case died of pneumonia, the other of exhaustion.
Liver:														
Gall stones	4	1	3	...	...	...	...	...	3	1	...	3	1	Died of shock following cholecystectomy.
Abscess	1	1	...	...	...	1	...	...	...	...	...	...	1	Died of exhaustion.
Intestines:														
Hernia:														
Reducible inguinal	31	30	1	3	5	5	8	4	4	2	...	31	...	
,, femoral	4	..	4	...	...	1	1	2	...	...	...	4	...	
,, umbilical	2	1	1	...	...	...	...	1	1	...	...	2	...	
Irreducible inguinal	4	3	1	...	...	1	2	...	1	...	...	4	...	
,, umbilical	1	...	1	...	...	...	...	1	...	...	...	1	...	
Strangulated inguinal	5	4	1	...	...	...	1	1	...	1	2	5	...	
,, umbilical	2	1	1	1	...	...	...	...	...	1	...	2	...	
Perforated duodenal ulcer	1	1	...	...	...	...	...	1	...	...	...	...	1	Died of acute peritonitis 3 days after admission.
Fæcal fistula	1	...	1	...	...	...	1	...	...	...	...	1	...	
Perityphlitis and appendicitis	16	11	5	...	1	5	3	4	2	1	...	15	1	Died of exhaustion.
Peritonitis	6	2	4	...	2	2	1	...	1	...	...	3	3	
Ascites	1	1	...	...	...	...	...	...	...	1	...	...	1	
Intestinal obstruction	3	...	3	...	...	...	1	...	1	...	1	...	3	One case died of acute peritonitis, the other two of exhaustion.
Rectum and anus:														
Proctitis	1	...	1	...	...	...	1	...	...	...	...	1	...	
Fibrous stricture	2	...	2	...	...	...	...	1	...	...	1	1	1	Died of pneumonia.
Hæmorrhoids	21	9	12	...	...	2	3	7	3	5	1	21	...	
Fissure	3	...	3	...	..	...	1	2	...	...	...	3	...	
Fistula in ano	16	13	3	1	...	...	5	4	5	1	...	16	...	

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TABLE I.—*continued.*

DISEASES.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
DISEASES OF THE DIGESTIVE SYSTEM, &C.—*continued.*														
Rectum and anus—contd.														
Prolapse	2	...	2	1	...	...	1	...	...	...	...	2	...	
Polypus	3	2	1	...	1	1	1	...	...	...	...	3	...	
Pruritus ani	1	...	1	...	...	...	...	...	1	...	...	1	...	
DISEASES OF THE GENITO-URINARY ORGANS:														
Kidney:														
Hydronephrosis	1	...	1	...	...	...	...	1	...	...	...	1	...	
Pyonephrosis	3	...	3	...	...	...	2	1	...	...	...	2	1	Died of exhaustion.
Calculus	6	5	1	...	...	...	1	1	3	1	...	6	...	
Moveable	8	...	8	...	...	...	4	1	3	...	...	8	...	
Tuberculous	2	2	...	...	...	...	...	2	...	...	...	2	...	
Ureter:														
Calculus	1	...	1	...	...	1	...	...	...	...	...	1	...	
Bladder:														
Irritability	2	2	...	2	...	...	...	...	...	...	...	2	...	
Cystitis	1	1	...	...	...	...	1	...	...	...	...	1	...	
Calculus	5	5	...	1	1	...	2	...	1	...	...	5	...	
Foreign body	1	...	1	...	...	...	1	...	...	...	...	1	...	

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Urethra:														
Stricture	12	12	...	...	...	...	...	4	5	2	1	12	...	
Prostate:														
Prostatitis	1	1	...	...	...	...	...	...	...	...	1	1	...	
Enlarged	3	3	...	...	...	...	...	...	...	...	3	1	2	One case died of fatty heart, the other of exhaustion.
Hæmaturia	2	2	...	...	..	1	...	...	1	...	...	2	...	
Nocturnal incontinence	4	2	2	2	...	2	...	...	...	...	...	4	...	
Retention of urine	5	5	...	...	...	...	...	1	...	1	3	4	1	Due to enlarged prostate; suppurative nephritis caused death.
Penis:														
Phimosis	6	6	...	...	1	2	2	...	...	1	...	6	...	
Paraphimosis	1	1	...	...	...	...	1	...	...	...	...	1	...	
Tunica Vaginalis:														
Hydrocele	5	5	...	2	...	1	1	...	...	...	1	5	...	
Testis:														
Undescended	2	2	...	...	1	1	...	...	...	...	...	2	...	
Orchitis	1	1	...	...	...	...	1	...	...	...	...	1	...	
Epididymitis	1	1	...	...	...	...	1	...	...	...	...	1	...	
Syphilitic	1	1	...	...	...	...	...	...	...	1	...	1	...	
Tuberculous	7	7	...	1	...	...	3	2	1	...	...	7	...	
Female organs:														
Salpingitis	1	...	1	...	...	...	...	...	...	1	...	1	...	
Pregnancy	1	...	1	...	...	1	..	...	...	...	...	1	...	
Abortion	1	...	1	...	...	...	1	...	...	...	...	1	...	
Breast:														
Neuralgia	1	...	1	...	...	...	...	...	1	...	...	1	...	Died of phthisis.

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TABLE I.—*continued.*

DISEASES.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
DISEASES OF THE ORGANS OF LOCOMOTION:														
BONE, DISEASES OF:														
Periostitis and Osteitis:														
Skull	1	1	...	...	...	...	...	1	...	...	...	1	...	
Bones of lower extremity	4	2	2	...	1	1	1	1	...	...	...	4	...	
Caries and Necrosis:														
Jaw	2	1	1	1	...	...	...	1	...	...	...	2	...	
Spine	3	2	1	...	...	...	2	...	...	1	...	2	1	
Bones of upper extremity	9	7	2	1	...	1	2	4	...	...	1	9	...	
,, lower extremity	6	5	1	...	...	4	1	...	1	...	...	6	...	
Infective osteo-myelitis	1	...	1	...	...	1	...	...	...	...	...	...	1	Died two days after admission.
Multiple tuberculous disease	1	1	...	1	...	...	...	...	...	...	...	1	...	
DISEASES OF JOINTS:														
Ankylosis:														
Lower jaw	1	1	...	...	...	...	...	...	1	...	...	1	...	
Elbow	1	...	1	...	...	...	1	...	...	...	...	1	...	
Knee	1	1	...	...	...	...	...	...	1	...	...	1	...	
Synovitis: of														
Wrist	1	1	...	...	...	...	...	1	...	...	...	1	...	
Knee	3	2	1	...	...	3	...	...	...	...	...	3	...	
Ankle	1	1	...	...	...	...	...	...	1	...	...	1	...	

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Tubercle:														
Shoulder	2	2	...	...	...	1	...	...	...	...	1	1	1	Died of exhaustion following erysipelas.
Elbow	3	2	1	1	1	...	...	1	...	...	...	3	...	
Sacro-iliac	1	...	1	...	...	1	...	...	...	...	...	1	...	
Hip	12	8	4	1	3	4	4	...	...	...	...	12	...	
Knee	11	9	2	2	...	5	4	...	...	...	...	11	...	
Ankle	3	1	2	...	...	...	2	1	...	...	...	2	1	Died of Addison's disease.
Arthritis:														
Suppurative	4	3	1	...	1	...	...	3	...	...	...	4	...	
Gonorrhœal	3	3	...	...	...	...	1	2	...	...	...	3	...	
Osteo-arthritis:														
Knee	2	1	1	...	...	1	...	1	...	...	...	2	...	
Upper cervical vertebræ	1	1	...	...	...	...	...	1	...	...	...	1	...	
Charcot's disease:														
Knee	1	1	...	...	...	...	...	...	1	...	...	1	...	
Functional disease:														
Hip	1	...	1	...	...	...	1	...	...	...	...	1	...	
Morant Baker's cyst (elbow)	1	...	1	...	...	...	...	...	...	...	1	1	...	
Loose semilunar cartilage	1	...	1	...	...	...	1	...	...	...	...	1	...	
DISEASES OF STUMPS:														
Sinuses	1	1	...	...	...	1	..	...	...	...	...	1	...	
DISEASES OF BURSÆ AND TENDONS:														
Enlarged bursæ	7	4	3	...	...	1	1	1	2	2	...	7	...	
Suppurating bursæ	10	4	6	...	...	2	...	4	1	2	1	10	...	
Ganglion, simple	1	...	1	...	...	...	1	...	...	...	...	1	...	
Tuberculous teno-synovitis	1	...	1	...	...	...	...	1	...	...	...	1	...	

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TABLE I.—*continued.*

DISEASES.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
DISEASES OF CELLULAR TISSUE:														
INFLAMMATION AND SUPPURATION:														
Abscesses:														
Of head and neck	25	13	12	3	2	11	5	3	...	1	...	23	2	One case died of meningitis, the other of acute phthisis.
Of Upper extremity	11	8	3	3	...	...	5	2	1	...	...	11	...	
Of Lower ,,	15	12	3	2	2	7	1	2	...	1	...	13	2	Diarrhœa caused death in one case, heart failure in the other.
Of chest wall	5	3	2	...	...	...	2	1	1	1	...	5	...	
Mammary	5	...	5	...	...	1	1	3	...	...	...	5	...	
Of abdominal wall	4	4	...	1	...	1	...	2	...	...	...	4	...	
Pericæcal and appendicular	3	1	2	...	...	...	3	...	...	...	...	2	1	Died of exhaustion.
Perirenal	1	...	1	...	...	...	...	...	...	1	...	...	1	Died of exhaustion.
Psoas	5	1	4	1	1	1	1	1	...	...	...	4	1	Died of exhaustion.
Lumbar	2	...	2	...	...	...	2	...	...	...	...	2	...	
Of cornea	1	...	1	...	...	...	...	...	...	...	1	1	...	
Of lung	1	1	...	...	...	...	...	1	...	...	...	1	...	
Of perineum and groin	8	8	...	...	...	1	2	2	1	2	...	8	...	
Ischio-rectal and anal	6	5	1	...	...	1	1	1	2	...	1	6	...	
Cellulitis	15	10	5	1	...	1	3	3	2	2	3	11	4	One case died of pneumonia, another of bronchitis, the remaining two of exhaustion.
DISEASES OF CUTANEOUS SYSTEM:														
Ulcers	16	7	9	...	...	1	5	7	1	1	1	16	...	
Perforating ulcers	1	1	...	...	...	...	...	1	...	...	...	1	...	

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Lupus	7	1	6	...	1	6	...	...	...	...	...	7	...	
Whitlow	8	3	5	...	...	1	1	3	1	2	...	8	...	
Ingrowing toe-nail	2	...	2	...	...	...	1	...	1	...	...	2	...	
Painful scar	1	1	...	...	...	...	...	...	...	1	...	1	...	
Œdema of face	1	...	1	...	...	...	1	...	...	...	...	1	...	
Psoriasis	1	1	...	...	...	1	...	...	...	...	...	1	...	
Eczema	2	2	...	...	...	...	...	...	1	1	...	2	...	
Sycosis	1	1	...	...	...	...	...	...	...	1	...	1	...	
Sinuses	23	15	8	1	1	4	8	6	1	2	...	21	2	One case died of meningitis, the other of exhaustion.

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TABLE II.—INJURIES.

INJURIES.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
GENERAL INJURIES:														
Burns	6	4	2	1	1	2	1	..	...	1	...	5	1	Died of shock.
Scalds	3	2	1	1	...	1	1	...	...	...	...	3	...	
LOCAL INJURIES:														
Injuries of head and face:														
Wounds	19	15	4	1	1	3	...	6	3	2	3	18	1	Died of chronic fibrosis of kidneys.
Contusions	7	4	3	1	4	...	...	1	...	1	...	7	...	
Concussion	16	14	2	...	6	2	1	3	3	...	1	16	...	
Cerebral compression	1	1	...	...	...	1	...	...	...	...	...	1	...	
Ruptured membrana tympani	1	...	1	...	1	...	...	...	...	...	...	1	...	
Fractures:														
Lower jaw	2	1	1	...	...	...	1	1	...	...	...	2	...	
Vertex of skull	2	2	...	...	1	...	...	1	...	...	...	2	...	
Base of skull	6	6	...	...	...	1	1	...	3	1	...	2	4	
Injuries of neck:														
Cut throat	1	1	...	...	...	...	...	1	...	...	...	1	...	
Injuries of the thorax:														
Wound of lung	1	1	...	1	...	...	...	...	...	...	...	1	...	
Fractured costal cartilage	1	...	1	...	...	...	1	...	...	...	...	1	...	
Fractured ribs	7	5	2	...	...	...	2	2	1	1	1	6	1	Died of bronchitis.
Injuries of back and abdomen:														
Contusions	9	7	2	1	2	1	2	1	1	1	...	9	...	
Ruptured inner coat of stomach	1	1	...	...	1	...	...	...	...	...	...	1	...	

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Injuries of pelvis and genital organs:														
Wound of perineum	1	...	1	...	...	...	1	...	...	...	...	1	...	
Injury to urethra	2	2	...	...	...	...	...	1	1	...	...	2	...	
Fractured pelvis	3	2	1	...	...	...	...	1	1	1	...	2	1	Only lived half-an-hour after admission; had also fractured ribs.
INJURIES OF UPPER EXTREMITIES:														
Wounds	12	11	1	1	1	6	2	...	...	1	1	12	...	
Contusions	2	2	...	...	...	1	1	...	...	...	...	2	...	
Fractures:														
Simple:														
Humerus	2	1	1	...	1	...	...	...	...	1	...	2	...	
Ulna and radius	3	3	...	...	...	...	1	1	...	1	...	3	...	
Radius	1	...	1	...	...	...	...	1	...	...	...	1	...	
Compound:														
Radius and ulna	1	1	...	...	...	...	1	...	...	...	...	1	...	
INJURIES OF LOWER EXTREMITIES:														
Wounds	2	2	...	...	2	...	...	...	...	...	...	2	...	
Contusions	4	4	...	...	...	2	1	...	...	1	...	4	...	
Sprains	1	1	...	...	...	...	1	...	...	...	...	1	...	
Fractures:														
Simple:														
Femur	12	8	4	2	1	1	...	1	3	1	3	11	1	Also had fractured ribs and transverse processes of vertebræ.
Patella	5	4	1	...	...	...	1	1	1	2	...	5	...	
Tibia and fibula	4	3	1	...	...	...	...	1	3	...	...	4	...	
Tibia	6	5	1	...	..	2	1	1	...	2	...	6	...	
Fibula	3	3	...	...	...	...	2	1	...	...	...	3	...	
Pott's	4	4	...	...	...	...	...	2	1	1	...	4	...	
Astragalus	1	1	...	...	...	...	1	...	...	...	...	1	...	

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TABLE II.—*continued.*

INJURIES.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
INJURIES OF LOWER EXTREMITIES—*continued.*														
***Fractures*—contd.**														
Compound:														
Femur	1	1	...	...	...	...	...	...	...	...	1	1	...	
Tibia and fibula	2	2	...	...	...	...	1	...	1	...	...	2	...	
Tibia	2	2	...	...	...	...	1	...	1	...	...	2	...	
Malunited	1	1	...	...	...	1	...	...	...	...	...	1	...	
Dislocations:														
Hip	1	1	...	...	...	...	...	...	...	1	...	1	...	

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TABLE III.—OPERATIONS.

OPERATIONS.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
REMOVAL OF TUMOURS:														
Carcinoma:														
Glands of neck	1	1	...	...	...	...	...	...	...	1	...	1	...	
Breast (primary)	14	...	14	...	...	...	...	1	4	2	7	13	1	Died of bronchitis.
,, (recurrent)	1	...	1	...	...	...	...	1	...	...	...	1	...	
Epithelioma:														
Tongue	2	2	...	...	...	...	...	...	...	2	...	2	...	
Labium majus	1	...	1	...	...	...	...	...	...	...	1	1	...	
Rodent ulcer:														
Face	3	3	...	...	...	...	...	...	1	...	2	2	1	Died of heart failure.
Sarcoma:														
Skin	1	1	...	...	...	...	...	...	...	1	...	1	...	
Neck	1	...	1	...	...	1	...	...	...	...	...	...	1	Disease disseminated; died of exhaustion.
Superior maxilla	1	1	...	...	...	1	...	...	...	...	...	1	...	
Scapula	2	...	2	...	...	...	...	...	2	...	...	2	...	
Femur	2	1	1	...	...	...	1	...	1	...	...	2	...	
Foot	1	1	...	...	...	...	...	...	...	...	1	1	...	
Breast	1	...	1	...	...	...	...	...	1	...	...	1	...	
Cysts:														
Dermoid	2	...	2	...	...	...	2	...	...	...	...	2	...	
Sebaceous	4	1	3	...	...	1	...	...	1	2	...	4	...	
Serous	5	2	3	1	...	...	...	1	3	...	...	5	...	
Papillomatous (breast)	1	...	1	...	...	...	...	...	1	...	...	1	..	
Ovarian	2	...	2	...	...	...	...	...	1	...	1	2	...	

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TABLE III.—*continued.*

OPERATIONS.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
REMOVAL OF TUMOURS—*contd.*														
Other tumours:														
Granuloma	1	1	...	...	...	...	...	...	...	1	...	1	...	
Fibroma	2	...	2	...	...	...	2	...	...	...	...	2	...	
Fibro-adenoma	1	...	1	...	...	...	1	...	...	...	...	1	...	
Fibro-neuroma	1	...	1	...	...	1	...	...	...	...	...	1	...	
Lipoma	2	...	2	...	1	...	...	1	...	...	...	2	...	
Enchondroma	1	...	1	...	...	1	...	...	...	...	...	1	...	
Exostosis	4	3	1	...	1	2	1	...	...	...	...	4	...	
Angioma	9	2	7	5	...	1	3	...	...	...	...	9	...	
OPENING ABSCESSES:														
Acute and chronic	93	58	35	10	3	21	24	22	7	6	...	88	5	Diarrhœa caused death in one case, heart failure in another, the remaining three died of exhaustion.
OPERATIONS ON NERVES:														
Stretching	1	1	...	...	...	...	...	1	...	...	...	1	...	
Nerve suture	1	1	...	...	...	1	...	...	...	...	...	1	...	
OPERATIONS ON THE EYE AND EYELIDS:														
Excision of globe	1	1	...	...	...	1	...	...	...	...	...	1	...	
Iridectomy	1	...	1	...	...	...	...	...	...	...	1	1	...	
Cataract extraction	2	2	...	...	...	1	...	...	...	...	1	2	...	
For Meibomian cyst	1	1	...	...	...	...	...	...	1	...	...	1	...	
OPERATIONS ON THE EAR:														
Scraping	1	...	1	...	...	1	...	...	...	...	...	1	...	

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OPERATIONS ON THE NOSE:														
Turbinectomy	3	1	2	...	...	1	1	1	...	...	...	3	...	
Straightening septum	2	1	1	...	1	...	1	...	...	...	...	2	...	
Dilatation for nasal stenosis	2	...	2	...	...	2	...	...	...	...	...	2	...	
Removal of polypi	2	1	1	...	...	1	...	1	...	...	...	2	...	
OPERATIONS ON THE PHARYNX AND TRACHEA.														
Tonsillotomy	7	1	6	2	4	1	...	...	...	...	...	7	...	
Adenoids	25	11	14	6	11	8	...	...	...	...	...	25	...	
Tracheotomy	1	1	...	...	...	...	...	...	...	1	...	...	1	Case of œsophageal cancer; died of exhaustion 16 days after operation.
OPERATIONS ON THE HEAD AND FACE.														
Hare-lip	4	3	1	4	...	...	...	...	...	...	...	4	...	
Cleft palate	3	2	1	2	1	...	...	...	...	...	...	3	...	
Arresting hæmorrhage	1	...	1	...	...	...	1	...	...	...	...	1	...	
OPERATIONS ON THYROID GLAND:														
Cystic enlargement	4	...	4	...	...	2	1	...	...	...	1	4	...	
OPERATIONS ON VEINS.														
Varicose veins	36	22	14	...	...	3	18	8	6	1	...	36	...	
Varicocele	15	15	...	...	...	5	9	1	...	...	...	15	...	
OPERATIONS ON ARTERIES:														
Ligature of femoral	1	1	...	...	...	...	...	...	...	1	...	1	...	
OPERATIONS ON THE CHEST:														
Exploration of wound	1	1	...	1	...	...	...	...	...	...	...	1	...	
Removal of costal cartilage	1	...	1	...	...	...	1	...	...	...	...	...	1	

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TABLE III.—*continued.*

OPERATIONS.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
REMOVAL OF TUMOURS—*contd.*														
Other tumours:														
Granuloma	1	1	...	...	...	...	...	...	...	1	...	1	...	
Fibroma	2	...	2	...	...	...	2	...	...	...	...	2	...	
Fibro-adenoma	1	...	1	...	...	...	1	...	...	...	...	1	...	
Fibro-neuroma	1	...	1	...	...	1	...	...	...	...	...	1	...	
Lipoma	2	...	2	...	1	...	...	1	...	...	...	2	...	
Enchondroma	1	...	1	...	...	1	...	...	...	...	...	1	...	
Exostosis	4	3	1	...	1	2	1	...	...	...	...	4	...	
Angioma	9	2	7	5	...	1	3	...	...	...	...	9	...	
OPENING ABSCESSES:														
Acute and chronic	93	58	35	10	3	21	24	22	7	6	...	88	5	Diarrhœa caused death in one case, heart failure in another, the remaining three died of exhaustion.
OPERATIONS ON NERVES:														
Stretching	1	1	...	...	...	...	...	1	...	...	...	1	...	
Nerve suture	1	1	...	...	...	1	...	...	...	...	...	1	...	
OPERATIONS ON THE EYE AND EYELIDS:														
Excision of globe	1	1	...	...	...	1	...	...	...	...	...	1	...	
Iridectomy	1	...	1	...	...	...	...	...	...	...	1	1	...	
Cataract extraction	2	2	...	...	...	1	...	...	...	...	1	2	...	
For Meibomian cyst	1	1	...	...	...	...	...	...	1	...	...	1	...	
OPERATIONS ON THE EAR:														
Scraping	1	...	1	...	...	1	...	...	...	...	...	1	...	

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Operations on the Nose:														
Turbinectomy	3	1	2	...	...	1	1	1	...	...	...	3	...	
Straightening septum	2	1	1	...	1	...	1	...	...	...	...	2	...	
Dilatation for nasal stenosis	2	...	2	...	...	2	...	...	...	...	...	2	...	
Removal of polypi	2	1	1	...	...	1	...	1	...	...	...	2	...	
Operations on the Pharynx and Trachea.														
Tonsillotomy	7	1	6	2	4	1	...	...	...	...	...	7	...	
Adenoids	25	11	14	6	11	8	...	...	...	...	...	25	...	
Tracheotomy	1	1	...	...	...	...	...	...	...	1	...	...	1	Case of œsophageal cancer; died of exhaustion 16 days after operation.
Operations on the Head and Face.														
Hare-lip	4	3	1	4	...	...	...	...	...	...	...	4	...	
Cleft palate	3	2	1	2	1	...	...	...	...	...	...	3	...	
Arresting hæmorrhage	1	...	1	...	...	...	1	...	...	...	...	1	...	
Operations on Thyroid Gland:														
Cystic enlargement	4	...	4	...	...	2	1	...	...	...	1	4	...	
Operations on Veins.														
Varicose veins	36	22	14	...	...	3	18	8	6	1	...	36	...	
Varicocele	15	15	...	...	...	5	9	1	...	...	...	15	...	
Operations on Arteries:														
Ligature of femoral	1	1	...	...	...	...	...	...	...	1	...	1	...	
Operations on the Chest:														
Exploration of wound	1	1	...	1	...	...	...	...	...	...	...	1	...	
Removal of costal cartilage	1	...	1	...	...	...	1	...	...	...	...	...	1	

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TABLE III.—*continued.*

OPERATIONS.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
OPERATIONS ON THE ABDOMEN:														
Laparotomy:														
Peritonitis	1	...	1	...	...	1	...	...	...	...	...	...	1	Died 2 days after operation.
Obstruction	3	1	2	...	...	...	1	...	1	1	...	...	3	Two of the cases died morning following operation; the third case lived 7 days and died of exhaustion.
Perforated gastric ulcer	1	1	...	...	...	...	...	...	...	1	...	...	1	Died of acute peritonitis.
Perforated duodenal ulcer	1	1	...	...	...	...	...	1	...	...	...	...	1	Died of acute peritonitis.
Gastrostomy	3	2	1	...	...	...	...	...	1	2	...	1	2	Both cases died of exhaustion.
Gastro-jejunostomy	8	4	4	...	...	...	1	2	1	2	2	3	5	Four cases died of exhaustion; one of pneumonia.
Inguinal colotomy	4	1	3	...	...	...	...	...	...	2	2	2	2	One case died day after operation, the other lived 30 days.
For fæcal fistula	1	...	1	...	...	...	1	...	...	...	...	1	...	
Exploration of liver	1	1	...	...	...	1	...	...	...	...	...	...	1	Died from exhaustion due to hepatic abscess.
Cholecystotomy	1	...	1	...	...	...	...	...	1	...	...	1	...	
Cholecystectomy	2	...	2	...	...	...	...	...	1	1	...	1	1	Died of shock following operation.
Excision of vermiform appendix	12	8	4	...	2	3	2	3	1	1	...	10	2	Both cases died of exhaustion.
STRANGULATED HERNIA:														
Inguinal	5	4	1	...	...	...	1	1	...	1	2	5	...	
Umbilical	2	1	1	1	...	...	...	...	...	1	...	2	...	
RADICAL CURE OF HERNIA:														
Inguinal	29	27	2	2	5	4	8	4	5	1	...	29	...	
Femoral	3	...	3	...	...	1	1	1	...	...	...	3	...	
Umbilical	2	1	1	...	...	...	...	1	1	...	...	2	...	

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OPERATIONS ON RECTUM AND ANUS:														
Piles	20	9	11	...	...	2	4	5	3	5	1	20	...	
Fissure	3	...	3	...	...	...	1	2	...	...	...	3	...	
Fistula in ano	15	12	3	...	...	...	5	4	5	1	...	15	...	
Proctotomy	1	1	...	...	...	...	...	...	...	...	1	...	1	Died of pneumonia.
Cauterization	2	...	2	...	...	...	2	...	...	...	...	2	...	
Excision	3	1	2	...	...	...	...	...	1	...	2	3	...	
Exploration of rectum	1	1	...	...	1	...	...	...	...	...	...	1	...	
Removal of polypus	2	1	1	...	...	1	1	...	...	...	...	2	...	
OPERATIONS ON THE GENITO-URINARY ORGANS:														
Urethra:														
Dilatation	7	7	...	1	...	...	...	1	2	2	1	7	...	
Internal urethrotomy	4	4	...	...	...	...	...	1	2	1	...	4	...	
Wheelhouse's operation	1	1	...	...	...	...	...	1	...	...	...	1	...	
Torsion of (in female, for incontinence)	1	...	1	...	...	1	...	...	...	...	...	1	...	
Bladder:														
Aspiration	1	1	...	...	...	...	...	...	...	...	1	...	1	Case of enlarged prostate; died of suppurative nephritis.
Suprapubic drainage	1	1	...	...	...	...	...	...	...	...	1	1	...	
Exploration	6	6	...	1	1	...	2	...	2	...	...	6	...	
Lithotomy	1	1	...	1	...	...	...	...	...	...	...	1	...	
Ureter:														
Removal of calculus from	1	...	1	...	...	1	...	...	...	...	...	1	...	
Kidney:														
Exploration	2	1	1	...	...	...	...	...	2	...	...	2	...	
Nephrorrhaphy	6	...	6	...	...	...	3	1	2	...	...	6	...	
Nephrotomy	4	2	2	...	...	...	1	1	1	1	...	4	...	
Nephrolithotomy	2	2	...	...	...	...	1	1	...	...	...	2	...	
Nephrectomy	2	...	2	...	...	...	1	1	...	...	...	1	1	Died of exhaustion 15 days after operation.

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TABLE III.—*continued.*

OPERATIONS.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
OPERATIONS ON THE GENITO-URINARY ORGANS—*contd.*														
Penis:														
Slitting prepuce	2	2	...	...	..	...	2	...	...	...	...	2	...	
Circumcision	11	11	...	3	1	3	2	...	...	2	...	11	...	
Tunica vaginalis:														
Excision of hydrocele	4	4	...	2	...	1	...	...	...	...	1	4	...	
Testis:														
Castration	9	9	...	1	1	...	4	2	...	...	1	8	1	Died of fatty heart 10 days after operation for enlarged prostate.
Fixing testes in scrotum	1	1	...	...	...	1	...	...	...	...	...	1	...	
Fallopian tubes:														
Exploration of	1	...	1	...	...	...	...	...	...	1	...	1	...	
Perineorraphy	1	...	1	...	...	...	1	...	...	...	...	1	...	
OPERATIONS ON BONES:														
Scraping and gouging	14	9	5	2	1	6	1	3	...	...	1	13	1	Died of infective osteo-myelitis.
Opening abscesses in	1	1	...	...	...	1	...	...	...	...	...	1	...	
Resection of ribs	8	6	2	...	...	2	4	2	...	...	...	7	1	Died of exhaustion.
Osteotomy	5	2	3	...	2	2	1	...	...	...	...	5	...	
Sequestrotomy	5	4	1	...	...	1	1	2	1	...	...	5	...	
Gouging mastoid antrum	8	4	4	...	2	2	3	...	...	1	...	6	2	One case died of meningitis, the other of acute phthisis.

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Wiring patella	1	1	...	...	...	...	...	...	...	1	...	1	...	
Wiring tibia	1	1	...	...	...	...	1	...	...	...	...	1	...	
Wiring tibia and fibula	2	2	...	...	...	...	...	1	1	...	...	2	...	
Excision of scaphoid	1	1	...	...	...	...	1	...	...	...	...	1	...	
Trephining skull	3	3	...	...	...	...	1	1	1	...	...	3	...	
OPERATIONS ON JOINTS:														
Excision and arthrectomy:														
Lower jaw	1	1	...	...	...	...	...	...	1	...	...	1	...	
Shoulder	1	1	...	...	...	...	...	...	...	1	...	...	1	Died of exhaustion following erysipelas.
Elbow	1	1	...	...	1	..	...	...	...	...	...	1	...	
Knee	2	2	...	...	...	1	...	1	...	...	...	2	...	
Hip	1	1	...	...	1	...	...	...	...	...	...	1	...	
Metatarsophalangeal	6	3	3	...	...	2	2	2	...	...	...	6	...	
Incision and drainage	11	8	3	1	...	3	3	4	...	...	...	11	...	
Wrenching elbow	1	...	1	...	...	...	1	...	...	...	...	1	...	
Injections into joint	3	1	2	...	...	1	2	...	...	...	...	3	...	
Removal—Morrant Baker's cyst	1	...	1	...	...	...	...	...	...	...	1	1	...	
AMPUTATIONS:														
Arm	1	1	...	...	...	...	...	1	...	...	...	1	...	
Hand	1	1	...	...	...	1	...	...	...	...	...	1	...	
Thumb	1	1	...	...	...	...	...	1	...	...	...	1	...	
Finger	5	4	1	...	...	2	...	1	1	...	1	5	...	
Through hip-joint	1	1	...	...	...	1	...	...	...	...	...	1	...	
Thigh	6	5	1	1	1	...	1	...	1	1	1	6	...	
Through knee-joint	2	2	...	...	...	...	1	...	...	1	...	1	1	Case of diabetic gangrene; died.
Leg	1	1	...	...	...	1	...	...	...	...	...	1	...	
Pirogoff	1	1	...	...	...	...	1	...	...	...	...	1	...	
Syme	2	1	1	...	...	...	1	...	1	...	...	2	...	
Toe	4	3	1	...	1	1	...	...	2	...	...	4	...	

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TABLE III.—*continued.*

OPERATIONS.	Total.	Sex.		Age.								Result.		Remarks.
		M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	R.	D.	
OPERATIONS ON TUBERCULOUS GLANDS:														
Scraping	6	5	1	1	...	4	1	...	...	...	...	6	...	
Excision	33	19	14	2	6	13	9	1	2	...	...	33	...	
OPERATIONS ON MUSCLES, TENDONS, BURSÆ, &C.														
Tenotomy	11	4	7	3	2	3	1	1	...	1	...	11	...	
Tendon grafting	1	...	1	...	...	1	...	...	...	...	...	1	...	
Division of fascia	5	4	1	...	...	1	...	...	...	3	1	5	...	
Excision of bursa	13	6	7	...	...	2	1	3	3	3	1	13	...	
Excision of ganglia	1	...	1	...	...	...	1	...	...	...	...	1	...	
Scraping teno-synovitis	1	...	1	...	...	...	...	1	...	...	...	1	...	
OPERATIONS ON SKIN AND CONNECTIVE TISSUE:														
Scraping sinuses	14	7	7	1	1	2	5	4	...	1	...	12	2	One case died of exhaustion, the other of meningitis.
Scraping lupus	6	1	5	...	1	5	...	...	...	...	...	6	...	
Scraping ulcers	3	...	3	...	...	...	3	...	...	...	...	3	...	
Avulsion of nail	1	...	1	...	...	...	1	...	...	...	...	1	...	
Suture of wounds	10	8	2	...	1	...	...	4	1	2	2	10	...	
Skin-grafting	12	8	4	2	1	2	1	2	1	2	1	12	...	
Whitlow	5	1	4	...	...	1	1	1	...	2	...	5	...	
For cellulitis	12	7	5	...	...	1	2	3	2	2	2	9	3	One case died of pneumonia, another of bronchitis, and the third of exhaustion.

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TABLE IV.—*Table of Infectious Diseases in Surgical Wards during* 1900.

Sex.	Date of admission.	Disease for which admitted.	Hospital disease.	Result and date.
M.	May 10, 1900 ...	Tuberculous disease of shoulder joint	Erysipelas	Died, May 24, 1900.
M.	,, 28, ,,	Whitlow	,, ...	Discharged cured, August 1, 1900.

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REPORT OF CASES IN "ARDEN WARD"

(FOR DISEASES OF WOMEN)

DURING THE YEAR 1900.

By A. R. ROCHE.

Number of Patients under treatment January 1st, 1900	9
Number of Patients admitted, 1900	112
Total	121

Number of Patients discharged during the year:

Cured or relieved	95	
Unrelieved	12	
		— 107
Died	5	
Under treatment, December 31st, 1900 ...	9	
		— 14
Total		121

The mortality during the year was 4.14 per cent.

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Cases in Arden Ward.

Nature of Case.	No. of Case.	Initials.	Age.	Result.	No. in Register.	Remarks, Treatment, &c.
Uterus:						
Prolapse	I	C. C.	50	Unrelieved	Z. 93	Complicated with cirrhosis of liver and ascites.
	II	A. D.	41	Unrelieved	Z. 104	Transferred to Queen Anne Ward for nephrorrhaphy.
	III	R. P.	41	Relieved	A. 9	
	IV	B. L.	36	Relieved	A. 72	
Polypi	I	H. M.	43	Cured	A. 45	Polypus attached to a pedicle and weighed 4½ ozs.
	II	E. T.	40	Cured	A. 81	
Fibroids	I	E. C.	52	Relieved	A. 11	
	II	E. S.	59	Relieved	A. 26	Subperitoneal fibroid and prolapsus uteri.
	III	E. H.	40	Relieved	A. 30	
	IV	M. W.	51	Relieved	A. 65	
	V	G. B.	29	Relieved	A. 76	Submucous fibroid. Twice operated on by Dr. Pollock.
	VI	E. H.	61	Unrelieved	A. 94	
	VII	M. B.	48	Relieved	A. 105	Transferred to Percy Ward, and hysterectomy done by Mr. Spencer.
Retroflexion	I	E. C.	38	Relieved	A. 15	
	II	E. B.	36	Relieved	A. 59	
Subinvolution	I	E. C.	55	Relieved	A. 106	
Endometritis	I	M. J.	20	Relieved	A. 35	
	II	E. S.	54	Relieved	A. 46	
Cervix Uteri:						
Carcinoma	I	C. W.	30	Unrelieved	A. 23	
	II	C. D.	46	Unrelieved	A. 104	

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Ulceration	I	E. F.	58	Relieved	A. 67	Prolapse of uterus and cystocele.
OVARY:						
Tumours	I	P. G.	43	Death	A. 2	Was not operated on. At post-mortem examination a cystic malignant growth of the ovary was found, fixed round the uterus and causing by adhesions kinking of the rectum.
	II	E. E.	33	Cured	A. 6	Unilocular cyst of left ovary. Operation by Mr. Spencer.
	III	P. F.	29	Cured	A. 7	Unilocular cyst of left ovary. Operation by Mr. Spencer.
	IV	M. N.	40	Unrelieved	A. 8	Malignant disease of ovary. Refused operation.
	V	F. A.	66	Relieved	A. 32	Complicated by prolapse of uterus and rectum. Transferred to Queen Anne Ward and operated on by Mr. Spencer.
	VI	E. F.	48	Cured	A. 63	Fibro-leio-myoma. Transferred to Percy Ward for operation by Mr. Spencer.
	VII	M. W.	32	Cured	A. 93	
	VIII	C. Y.	29	Cured	A. 98	Transferred to Percy Ward. Operation by Mr. Spencer.
Ovaritis	I	A. H.	28	Relieved	A. 51	
	II	M. M.	17	Relieved	A. 86	
VAGINA:						
Ulceration	I	E. B.	30	Relieved	A. 13	Resulting from a ring pessary.
	II	J. J.	50	Relieved	A. 103	
Gonorrhœa	I	F. B.	16	Relieved	A. 77	
VULVA:						
Labial abscess	I	G. A.	40	Relieved	A. 69	
Epithelioma	I	F. B.	75	Relieved	A. 95	Growth was a recurrence.
BLADDER, &C.:						
Epithelioma (?)	I	E. S.	67	Unrelieved	A. 50	
Cystitis	I	F. G.	20	Cured	A. 34	
	II	B. H.	44	Cured	A. 57	
	III	E. A.	32	Cured	A. 66	

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Cases in Arden Ward.

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Epithelioma (?)	I	E. S.	67	Unrelieved	A. 50	
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	II	B. H.	44	Cured	A. 57	
	III	E. A.	32	Cured	A. 66	

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Cases in Arden Ward—*continued.*

Nature of Case.	No. of Case.	Initials.	Age.	Result.	No. in Register.	Remarks, Treatment, &c.
Bladder, &c.—*contd.*						
Caruncle of urethra ...	I	E. J.	76	Cured	A. 68	
	II	L. W.	15	Cured	A. 75	
Diseases of Menstruation:						
Metrorrhagia	I	E. M.	35	Relieved	A. 16	
	II	E. H.	34	Relieved	A. 18	
	III	E. M.	23	Relieved	A. 24	
Menorrhagia.....	I	A. Q.	?	Relieved	Z. 103	
	II	A. L.	23	Relieved	A. 27	
	III	E. H.	?	Relieved	A. 28	
	IV	L. L.	40	Relieved	A. 84	
Dysmenorrhœa	I	L. M.	19	Unrelieved	A. 19	
	II	E. R.	25	Relieved	A. 52	
	III	L. F.	22	Relieved	A. 56	
Menopause	I	M. W.	43	Relieved	A. 20	
Leucorrhœa	I	E. B.	26	Relieved	A. 97	
Hæmatocolpos	I	B. C.	15	Relieved	A. 41	Hymen perforated and retained menses drained away.
Disorders during and after Pregnancy:						
Menorrhagia after miscarriage	I	J. C.	33	Cured	Z. 95	

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	II	K. C.	27	Relieved	Z. 98	Due to retention of placental fragments.
	III	R. W.	29	Relieved	A. 1	
	IV	E. B.	36	Cured	A. 3	
	V	E. W.	34	Relieved	A. 4	Curetted.
	VI	R. G.	35	Relieved	A. 5	Was in Percy Ward, and aborted at 4th month.
	VII	A. E.	22	Relieved	A. 12	
	VIII	A. W.	27	Relieved	A. 17	
	IX	L. B.	28	Relieved	A. 43	
	X	E. C.	28	Relieved	A. 49	Placental fragments retained after 6-months miscarriage.
	XI	H. D.	?	Relieved	A. 74	
	XII	E. B.	20	Relieved	A. 99	
	XIII	L. B.	43	Relieved	A. 100	
Abortion	I	L. L.	?	Relieved	A. 40	
	II	S. N.	29	Cured	A. 62	Aborted in hospital.
	III	M. E.	28	Relieved	A. 96	
Albuminuria	I	E. D.	18	Cured	A. 29	Child born in West Extras after natural labour. Both mother and child did well.
	II	A. O.	38	Relieved	Z. 106	After confinement.
Pregnancy	I	M. C.	20	—	A. 53	Seven-months pregnancy. Child died two hours after birth.
Ruptured uterus	I	E. W.	43	Cured	A. 85	Uterus supposed to be ruptured, with a tear through the cervix into the pouch of Douglas. Plugged, and removed to the hospital.
Vomiting	I	E. S.	32	Cured	A. 33	
Septicæmia	I	J. W.	31	Death	A. 60	Streptococci found in blood.
Phlegmasia alba dolens	I	M. R.	28	Improved	A. 37	
	II	A. H.	33	Relieved	A. 83	
Contracted pelvis	I	M. G.	40	—	A. 38	Brought to hospital in labour; forceps used; mother and child did well.
	II	L. D.	32	—	A. 101	Mother and child did well.

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Cases in Arden Ward—*continued.*

Nature of Case.	No. of Case.	Initials.	Age.	Result.	No. in Register.	Remarks, Treatment, &c.
Pelvis:						
Hæmatocele	I	E. L.	42	Relieved	Z. 99	
Pelvic peritonitis	I	E. R.	26	Relieved	Z. 100	Readmitted for same condition in May, 1900.
	II	E. B.	21	Cured	Z. 102	Abscess formed in middle line and was opened.
	III	R. H.	41	Relieved	A. 31	
	IV	E. T.	24	Relieved	A. 64	
	V	S. W.	24	Relieved	A. 71	
Pelvic cellulitis	I	K. L.	22	Relieved	A. 21	
	II	F. K.	32	Relieved	A. 22	
	III	E. E.	21	Death	A. 44	Pus in right broad ligament involving the right hip-joint and right knee.
	IV	F. M.	46	Relieved	A. 48	
	V	F. J.	26	Relieved	A. 58	Caused by retention of placental fragments after labour.
	VI	M. S.	20	Relieved	A. 96	
Unclassified Cases:						
Pneumonia	I	E. G.	45	Death	Z. 94	Died 9 days after childbirth.
Rheumatism	I	M. S.	26	Relieved	Z. 96	Vaginal discharge.
Intramammary abscess	I	F. B.	31	Cured	Z. 105	Abscess after suckling.
Acute peritonitis	I	E. W.	31	Death	Z. 107	Patient 2 months pregnant and aborted day after admission, and died next day. At post-mortem examination, general peritonitis, the result of perforation of the appendix, was found.
Hysteria	I	S. Y.	?	Relieved	A. 2	

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Intestinal obstruction	I	L. M.	38	Relieved	A. 10	Fæcal vomiting on admission. Symptoms ameliorated and operation done, as woman pregnant. Hot water by mouth and rectal feeding.
Anæmia	I	M. S.	20	Relieved	A. 14	
Abdominal tumour	I	J. B.	49	Unrelieved	A. 25	Transferred to Queen Adelaide Ward.
Psoas abscess	I	H W.	20	Relieved	A. 30	Transferred to Queen Anne Ward and operated on by Mr. Spencer, when a large psoas abscess was found, the origin of which could not be found.
Constipation	I	R. L.	38	Relieved	A. 47	
	II	H. P.	48	Relieved	A. 80	
Tertiary syphilis	I	A. C.	29	Unrelieved	A. 70	Discharged immediately.
Catarrhal enteritis	I	B. G.	22	Relieved	A. 78	
Dilatation of stomach	I	F. A.	36	Relieved	A. 79	Transferred to Queen Adelaide Ward.
Debility after parturition	I	E. C.	36	Relieved	A. 88	
Hæmorrhoids	I	L. P.	26	Relieved	A. 89	
Phthisis	I	J. D.	27	Unrelieved	A. 90	
Tubercular disease of breast	I	A. H.	23	Relieved	A. 92	
Mitral disease	I	E. S.	47	Unrelieved	A. 104	

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REPORT

OF THE

PATHOLOGICAL DEPARTMENT FROM NOVEMBER 15, 1899, TO DECEMBER 31, 1900.

W. S. LAZARUS-BARLOW, M.D., M.R.C.P.,

Pathologist to the Hospital.

As the result of the decision of the House Committee and the appointment of a Pathologist who was to control the entire Pathological Department of the Hospital, an additional report has to find place in this year's volume. It is that of the Clinical Laboratory, which was officially opened by Lord Lister, P.R.S., on June 12th. The full work for which the Laboratory was designed was not undertaken till the end of July, but from January 1st a certain number of investigations were conducted, and these are inserted in the report upon that part of the Department's work.

During 1900 Mr. G. B. James, F.R.C.S., formerly Curator, acted as Assistant-Curator of the Museum, but was obliged to resign the office at the end of the year owing to pressure of other engagements. The compilation of the Supplementary Catalogue, which constitutes the report on the Museum, was largely his work.

The report of the Department is considered under three headings: *A*, the Clinical Laboratory; *B*, the Post-mortem Room; and *C*, the Museum. But although these are thus divided, it is easy to understand that some cases are included under each heading.

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A.—The Clinical Laboratory.

Owing to the fact that the Clinical Laboratory was only opened on June 12th, 1900, it will be advisable to preface the report upon the work that has been done there by a short account of the Laboratory itself.

The laboratory is built on a space 40-ft. × 24-ft., which was formerly occupied by the West Extra Wards. These wards were thrown into one room, which is divided into two nearly equal portions by a glass and wood partition with a swing door. The object of this partition is to divide the laboratory into a bacteriological and a histological portion. The histological room is provided with a large sky-light, and has in addition two north and two south lights. The bacteriological room, lying beneath the post-mortem room, has two north and two east lights. Artificial light is well provided, as the two rooms are lighted by nine 16-candle power pendant electric lights, and numbers of wall and floor plugs enable illumination to be obtained wherever it is necessary.

The walls and ceiling of the laboratory are of white tiles, the floor is of teak parqueterie. All the fittings are of teak; the bench-tops, in particular, being of 2-in. teak, in order to minimise the chance of warping. One long bench, with drawers and cupboards beneath, is placed in the centre of the bacteriological room, and two slightly smaller benches in the histological room. Benches with drawers and cupboards beneath, but allowing knee-spaces, are arranged around the room. In the bacteriological room, on the south side, is a slate slab, which bears the incubators, sterilizers, etc.

An important feature of the laboratory is the drainage. This is carried out by a system of open channels made of iron and lined inside by a vitreous enamel. All sinks—of which there are nineteen in the two rooms—are properly trapped, and the entire drainage is unconnected with the rest of the drainage of the hospital. Without going into details, it is possible to clean out the entire drainage of the laboratory within half-an-hour. Each sink, except those in the central benches, in the fume-cupboard, and in the slate slab, is provided with hot and cold water.

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Another important feature is the plentiful supply of gas, but into this point we cannot enter here; its importance in the arrangement of a laboratory, however, is as difficult to overestimate as the importance of plentiful supplies of water and a good light.

The supply of apparatus is ample for all the purposes for which the laboratory was designed. A large part of the smaller and more delicate apparatus is kept in two cupboards with glazed sliding doors reaching from floor to ceiling, and fixed against the west wall of the histological room. Power is also available in the form of a small electric motor which is used to turn the centrifuge, keep the mechanical shaker in motion, and for numerous other purposes. The heating is by two gas-stoves, one of which is placed in each room.

Into the methods whereby the records of the laboratory are kept it is impossible to enter, but it may be said that by means of a system of registers, indexes, and a large cupboard designed to hold 9,000 slides, it will be possible to refer easily to an examination made several years previously.

The entire cost of the laboratory, with fittings and apparatus, was £2,000, but it must be remembered that the skeleton of the room was already present, and is not included in the sum.

The laboratory was opened, as has been said, by Lord Lister, President of the Royal Society. He was met by a distinguished company, including the Lord Kelvin, Sir W. S. Church, Bart., President of the Royal College of Physicians, and Sir W. MacCormac, Bart., President of the Royal College of Surgeons. The company was received by Sir John Wolfe Barry, K.C.B., Chairman of the House Committee, Dr. Allchin, Senior Physician, and Dr. Lazarus-Barlow, Pathologist.

A brass tablet to commemorate the opening, the gift of Dr. Allchin, will shortly be placed on the wall of the laboratory.

Since its opening there have been engaged upon research work in the laboratory the following gentlemen:—

L. Sims, M.D. of New York, who was investigating the weight of the brain under varying conditions.

G. Harvey Goldsmith, M.B., Ophthalmic Surgeon to the Bedford County Hospital, investigating certain points in reference to the hæmoglobin value of the blood in normal and in pathological conditions.

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J. J. DOUGLAS, M.D., F.R.C.P.E., investigating certain points in the morbid anatomy and histology of the central nervous system.

Drs. Goldsmith and Douglas are still engaged upon their researches.

In view of the establishment of the laboratory, notes were kept of all examinations made of material sent from the wards and operating theatre, from January 1st, 1900, so that the figures given below are those for an entire year. It must be remembered, however, that for the first seven months, a certain amount of bacteriological material was reported upon by Dr. Blaxall, Lecturer on Bacteriology to the Medical School.

In all 422 reports have been sent out from the laboratory, which have been classified as follows :—

Histological examinations	100
Examinations of sputa	102
Examinations of blood	87
Examinations of urine	32
Examinations of pus	17
Examinations for B. diphtheriæ	50
Miscellaneous	34

Of the histological examinations 23 were carcinomata, 12 sarcomata, 3 rodent cancers, 22 more or less chronically inflammatory, and 16 tubercular. The remainder were of kinds difficult to classify, but principally were non-malignant growths, enlargements of thyroid gland and walls of cysts. Of the 102 examinations of sputa, 98 were for the presence or absence of B. tuberculosis. In 29 cases they were found, in 69 not found. Two cases were for the presence or absence of pneumococci, but both were negative. One was for B. influenzæ and one for actinomyces, and both of these were negative.

Of the 87 examinations of blood 37 were for the estimation of numbers of erythrocytes and leucocytes, with differential count of the latter, and estimation of the hæmoglobin value; 50 were for Widal's reaction, and in 28 of these the reaction was positive.

Of the 32 examinations of urine, 8 were for the presence or absence of *B. tuberculosis*, and the result was negative in every instance; 1 was for the "quantities and varieties of proteid present"; 5 were for estimation of urea; 1 was for the quanti-

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tative estimation of sugar; and the remainder were for examination of deposit generally.

Of the 17 examinations of pus, 6 were for *B. tuberculosis*, but all were negative; 2 were for *M. gonorrhœæ*, of which 1 was positive; and the remainder were general.

Of the 50 examinations for *B. diphtheriæ*, all but 2 (which were taken from nasal discharge) were from the throat. *B. diphtheriæ* was absent on 34 occasions, but on 16 (including 1 of nasal discharge) bacilli were obtained in the cultivations which were morphologically indistinguishable from *B. diphtheriæ*.

The 34 miscellaneous examinations included 6 of pleural fluid, 1 of abdominal fluid, 4 chemical examination of calculi, 2 of rectal discharge, 1 of vaginal discharge, 2 of vomit.

In addition to the above, histological and bacteriological examinations were made of material obtained in the case of 81 autopsies.

The most interesting cases examined were as follows:—

No. $\frac{1}{36}$.—The case of a boy, aged 5 years, who suffered from periodic attacks of general dropsy with marked intermissions. The urine was examined on 5 consecutive days, and showed the presence of serum-albumin and serum-globulin in large quantity, and a fair quantity of proteose and heterose. No nucleo-albumin present. On several occasions the urine yielded a thick deposit of urates. Two months later there was practically no œdema, and the urine contained only a trace of proteid, of which about half was serum-albumin, half serum-globulin. No albumose present. A month later the patient died (P.M. and Case Book XI., No. 286) in a condition of general œdema. The kidneys were found to be the seat of typical tubal nephritis; one of them is preserved in the Museum (No. 799A).

No. $\frac{1}{55}$.—A fibroma of the tongue; described by Mr. Spencer in the Pathological Society's *Transactions* (1901) and preserved in Museum (No. 411A).

Nos. $\frac{1}{147}$ and $\frac{1}{153}$.—Material from swellings about the dorsum of the foot and the ankle joint. These were present in a man, aged 33, who had recently suffered from gonorrhœa, and who

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had a highly febrile temperature. They were thought to be pyæmic, but examination showed that their semi-solid contents consisted of pure needles of sodium bi-urate.

Nos. $\frac{1}{253}$, $\frac{1}{256}$, $\frac{1}{282}$, $\frac{1}{285}$, $\frac{1}{272}$.—Examinations of blood for Widal's reaction in a father and three children. The father's blood gave the reaction doubtfully at 1–50 dilution on the first occasion, but well at 1–100 dilution two days later. One son, aged 4 years, gave a reaction of 1–100 in 15 minutes, a daughter a reaction of 1–50 in 10 minutes, and another son, aged 13 months, a reaction of 1–100 in 15 minutes. In all the patients the clinical diagnosis of enteric fever was undoubted. The youngest child died, but no intestinal lesions of any kind were discovered at the autopsy. Nevertheless, typhoid bacilli were cultivated from the spleen. Two other children were at the same time in St. Thomas's Hospital with clinically certain enteric fever. By the courtesy of Dr. Sikes, the Medical Registrar, I am enabled to say that in one of these (a boy aged 11) the reaction was obtained at 1–50 dilution, and in the other (a girl aged 8) the reaction was always poor on the four occasions on which it was tested, never being distinctly greater than 1–20. These cases are of interest from two points of view. First, in reference to the variations observed in agglutinative power of the blood of different members of the same family, suffering from enteric fever at the same time, and therefore probably inoculated with the same strain of bacillus. Second, in reference to the possibility of the existence of enteric fever without intestinal lesion, a point which, in the case of the youngest child, who died, has been proved almost to the limits of scientific certainty. Of the 14 tests for *B. typhosus* to which the bacillus obtained from the spleen of this patient was subjected, it responded to 12 in a typical manner, and to the remaining 2 in a moderate degree.

No. $\frac{1}{356}$.—Inflamed angeio-lipoma from a boy aged 12. A mass the size of a five-shilling piece, in the deeper parts of which there was adipose tissue. More superficially there was granulation tissue, with well-marked new capillary blood vessels, leucocytes, and (on the surface) a thin layer of pus. About the margins of the mass there was skin, and beneath this were the elements of capillary angeiomatous tissue.

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No. $\frac{1}{287}$. Tissue from the scapular region of a boy aged 5 years. There was a large sub-scapular swelling which completely fixed the bone to the chest wall. It was thought to be a sarcoma, but microscopically there was only a condition of dense fibrosis, which was associated with great atrophy of the muscular bundles in the neighbourhood, and their replacement by fibrous tissue. The condition was said to have come on in a few months, and to have been associated with a blow on the part. The patient was kept under observation for three months, but the condition underwent no change.

No. $\frac{1}{411}$. Tumour of breast as large as the two fists, in a woman aged 46. It was said that a small growth had been present for five years but had recently increased in size with great rapidity. On section the growth consisted of two parts, one larger, globular, more superficial, cream-coloured on section, and showing points of hæmorrhage, the other spread out somewhat beneath the other mass and distinctly more pink in colour. Both portions showed the presence of cysts. Microscopically there is hardly any difference between the two portions. The growth appears to be a fibro-adenoma, in which the inter-canalicular connective tissue has become sarcomatous, the cells being very large and of typical spindle shape. At the same time the canals are present in great numbers, most of them are round or oval on section, but many are irregular. They are lined by a single layer of columnar cells, which in places shows signs of proliferation, while there are fair numbers of small intra-cystic papillary growths. A material is present in the canaliculi which probably represents an abnormal secretion. The form of growth to which the present specimen shows most resemblance is found in the large and soft "hypertrophies" of the prostate. But these are non-malignant, and although there were no secondary deposits found in the present case, the macroscopic appearances of the tumour are those of an intensely malignant growth. Upon the whole it seems probable that the tumour is a fibro-adenoma, of which the stroma is sarcomatous.

No. $\frac{1}{189}$. Growths in both breasts of a woman aged 64. In the left breast was an intensely hard scirrhus, and the growth was said to have been in existence ten years. No enlarged glands were found in the axilla. In the right breast was a larger and

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softer spheroidal cell carcinoma, in places scirrhoid, which originated three years previously. In the axilla of this side were glands affected with carcinoma of a highly cellular (spheroidal) type.

B.—The Post-mortem Room.

During the past year considerable improvements have been made in the post-mortem room. These are as follow:—

1. Hot water has been laid on, so that it is no longer necessary to heat water by gas on the spot.
2. The electric light has been installed.
3. All necessary materials have been provided for the immediate preparation of macroscopic specimens by the formalin method. These include large jars, each holding ten gallons for the formalin and the glycerine solutions, a number of glass dishes to receive the specimens, and rows of shelves on which to store the jars. At the same time large enamelled iron pots with covers have been provided for the storage of prepared specimens which, though not suitable for incorporation in the Museum, are nevertheless of great use for class purposes, and for students entering for examination.
4. A glass and metal case has been provided for the instruments, of which many were rejected and a fair supply of new ones obtained.

Certain other improvements, in particular the fixing of a water supply above the post-mortem table, are contemplated, and some of them are in a transition stage.

Since Nov. 15th, 1899, the work done in connection with autopsies has been as is set forth below. Histological and bacteriological examination has been made in 81 cases.

Cases Recorded		237
Males	141	
Females	96	
General Diseases:		
Enteric fever	3	
Diabetes mellitus	1	
Pernicious anæmia	2	

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GENERAL DISEASES—*continued.*	
"Wasting" and Immaturity	4
Pyæmia	1
Septicæmia	1
Syphilis	1
Tuberculosis	28
Erysipelas	1
Lardaceous disease (excluding cases in which the condition was *manifestly* secondary)	1
DISEASES OF THE NERVOUS SYSTEM:	
Chronic posterior basal meningitis	3
Acute posterior basal meningitis	1
Chronic hydrocephalus	1
Suppurative meningitis	2
Abscess of brain	3
Cerebellar cyst	1
Epilepsy	1
Acute ascending paralysis	2
Myelitis	1
Spina bifida	1
Cerebral hæmorrhage	5
DISEASES OF THE CIRCULATORY SYSTEM:	
Cardiac disease	25
DISEASES OF THE RESPIRATORY SYSTEM:	
Broncho-pneumonia	22
Lobar pneumonia	12
Gangrene of lung	1
Empyema	4
Pyopneumothorax (otitis)	1
Emphysema	2
DISEASES OF THE DIGESTIVE SYSTEM:	
Carcinoma of œsophagus	6
Carcinoma of stomach	7
Carcinoma of intestine	8
Duodenal ulcer	1
Duodenal cyst	1
Appendicitis	4
Ulcerative colitis	1
Intestinal obstruction	1
"Diarrhœa"	6
Dysentery	2
Suppuration in liver	3
Cirrhosis of liver	4
Icterus neonatorum	1
Peritonitis	2
Malignant disease of pancreas	2
DISEASES OF THE URINARY SYSTEM:	
Nephritis	1
Chronic renal fibrosis	11
Calculous pyonephrosis	1

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DISEASES OF ADRENAL BODIES:	
Addison's disease	2
DISEASES OF ORGANS OF LOCOMOTION:	
Gangrene	2
Osteomyelitis	1
DISEASES OF THE REPRODUCTIVE ORGANS:	
Enlargement of prostate	2
Malignant disease of cervix	1
Malignant cystadenoma of ovary	1
Multilocular ovarian cyst	1
Pelvic suppuration	1
Carcinoma of breast	1
OPERATIONS, ACCIDENTS, AND CONDITIONS NOT INCLUDED ABOVE:	
Rupture of liver	2
Fractures	11
Burn	1
Cellulitis of neck	1
Collapse after operation	3
Asphyxia	2
Drowning	1
Heat-stroke	1
Poisoning	1
Rodent cancer of face	1
Doubtful	4

Short Notes on most of the foregoing Cases. (*The Numbers are to be found in Post-Mortem and Case Book, Vol. XI.*)

GENERAL DISEASES.

Enteric Fever.—212. M., 17. Ulcers numerous in ileum; perforation; septic peritonitis.

371. M., $\frac{3}{12}$. No lesions in intestine; spleen enlarged; B. typhosus isolated from spleen. Five other members of family in Westminster and St. Thomas's Hospitals with definite enteric fever. All recovered.

388. M., 17. Numerous ulcers in ileum, one in cæcum; mesenteric glands softening in centre; ulceration of epiglottis; spleen very large; B. typhosus obtained from spleen in pure culture.

Pernicious anæmia.—203. F., 51. "Tabby-cat" striation of heart muscle (?); simple stenosis of large intestine tending to shut off the cæcum from ascending colon; and another

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stenosis a short distance further down the gut; stenoses not very firm; no iron-reaction.

310. M., 57. Atheroma; medulla of tibia intensely fatty and pale.

Pyæmia.—354. M., $1\frac{1}{2}$. Emaciation; recent circumcision; no internal foci of suppuration.

Septicæmia.—373. F., 31. Generative organs showed fairly recent parturition; pus in right fornix and in left ovary; left lung collapsed; pneumothorax and tubercular focus at base; infarctions left upper lobe; no peritonitis; pure cultivation of streptococci obtained from heart's blood.

Syphilis.—205. M., $\frac{2}{12}$. Congenital disease of liver; extensive broncho-pneumonia; microscopically well marked intercellular fibrosis of liver, especially dense around small branches of hepatic veins.

Tuberculosis.—191. F., 26. Advanced disease, both lungs and larynx; pigment gall-stones.

217. M., 34. Advanced disease right lung, moderate in left; laryngeal and intestinal ulceration.

243. M., 43. Widely scattered consolidation both lungs, little excavation; tuberculous ulceration intestines; two microscopically non-tubercular ulcers in stomach with eleven ounces of blood clot.

248. F., 13. Generalised miliary tuberculosis; cerebral meninges apparently free.

277. M., 45. Both lungs, intestines, and right epididymis showed tuberculosis; delirium tremens.

278. M., 64. Disseminated tuberculosis both lungs; grey hepatisation left upper lobe; syphilitic ulceration of rectum; pigment gall-stones.

289. F., 67. Fibroid tuberculosis especially of right lung; fibro-myomata of uterus.

291. M., 33. General tuberculosis; pyopneumothorax right side; both lungs riddled with vomicæ; tubercular peritonitis extensive; ulcers large intestine; meningitis; two tubercular foci size of Spanish-nut in right hemisphere.

294. F., $2\frac{4}{12}$. Tubercular cavities in lungs; right side empyema.

321. M., 8. Pulmonary and peritoneal tuberculosis,

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miliary for the most part; no tubercles found in cerebral meninges.

326. F., 6. Pulmonary and peritoneal tuberculosis of chronic type.

334. F., $\frac{11}{12}$. Generalised miliary tuberculosis, especially peritoneal and pulmonary.

367A. F., 17. Tuberculosis, lungs and intestines, caries of lumbar vertebræ.

382A. M., 33. Pulmonary and peritoneal; numerous intestinal ulcers.

208. F., 37. Tuberculosis, left kidney, advanced; right kidney and other tissues lardaceous; tubercular ulceration of bladder. Old puckered scar at left apex of lung.

223. F., $1\frac{4}{12}$.
245. M., $2\frac{3}{12}$.
307. M., $6\frac{1}{2}$.
375. F., $\frac{7}{12}$.

} Tubercular meningitis; generalised tuberculosis.

390. M., 55. Tuberculosis, lungs; caries of base of skull, sphenoid, atlas, axis, and extension to lower cervical vertebræ.

Lardaceous disease.—313. M., 44. Lardaceous change advanced in liver, kidneys, spleen, intestine (microscopically in many fibres of the longitudinal and circular muscular coats); syphilitic stenosis of left bronchus; Gummata in liver; necrotic ulcers in lower ileum and colon; testes unaffected; no evidences of bone disease.

Diseases of the Nervous System.

Posterior basal meningitis (chronic).—370A. F. $1\frac{5}{12}$. Emaciation, extreme flexion ankles, toes, wrists, and hands; no thoracic or abdominal lesions; small amount of gelatinous material at base; great excess of cerebro-spinal fluid; cord normal.

377. F., $\frac{9}{12}$. Emaciation; cutaneous petechiæ; bronchopneumonia; no tuberculosis; convolutions flattened; ventricles dilated and full of clear fluid; small amount of gelatinous material at base; no tubercles; under observation in Hospital forty-one days. From this and the preceding case cultivations were made. Diplococci were obtained which from their appearance in colonies, microscopically, and reaction to Gram's method

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were probably M. pneumoniæ. In fluid media they grew into long streptococcal chains.

261. F. $3\frac{4}{12}$. Great emaciation; no tuberculosis; excess of cerebro-spinal fluid; ventricles widely dilated; pia mater at base thickened and opaque. Under observation in hospital 83 days. No bacteriological examination.

Posterior basal meningitis (acute).—266. M., 4. Emaciation. Capillary bronchitis. No tubercles. Cerebral membranes thickened at base; some fibrin at base and along sylvian fissures. Ventricles widely distended with fluid. No tubercles could be found microscopically. Duration of illness 5 days. No bacteriological examination.

Chronic Hydrocephalus.—373A. M. 24. Emaciation. Acute sacral bed-sore. Septic broncho-pneumonia (inhalation). Liver $2\frac{1}{2}$ lbs., fatty. Membranes of brain much thickened at base. Ventricles dilated with cerebro-spinal fluid.

Suppurative meningitis.—222. F., 30. Pus beneath dura mater over whole cerebrum but especially over right hemisphere. In anterior region of skull there was pus between dura mater and bone which was traced across the middle line to the left side and thence to the left antrum. No pus or abnormality in brain substance or extension of suppuration to spinal cord. Venous sinuses contained no clot and were normal. A small lipoma was found in the substance of the left kidney.

296. F., 9. Pus superficial to right lobe of cerebellum in connection with otitis media of same side. Right torticollis.

Cerebral Abscess.—189. F., 11. Superficial cerebellar abscess (right side), clear fluid present in ventricles in considerable excess. Right lateral sinus contained broken-down decolourised clot, which extended in jugular to level of cricoid cartilage; below this the vein was blocked with solid adherent colourless clot as far as junction with right subclavian vein. No general meningitis, but foramen of Majendie blocked by mass of fibrin. Middle ear on right side completely disorganised.

298. M., 17. Cerebral meninges reddened; much pus at base of brain; left temporo-sphenoidal lobe adherent to dura mater, and contained an abscess-cavity the size of a large walnut. Pus extended down entire length of cord and distended

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spinal dura mater. Pus between petrous portion of left temporal bone, and its covering dura mater. Tympanic cavity full of granulations, and mastoid cells on this side full of pus. Diplococci were found in the pus, but it was greatly contaminated with extraneous organisms.

393. F., 11. Abscess in posterior portion of occipital lobe, and beneath tentorium, latter appearing to be meningeal (right side). Right lateral sinus converted into solid fibrous cord; some adherent (red) clot in right cavernous sinus; right middle ear full of curdy pus. Ossicles present, but incus highly carious.

Cerebellar Cyst.—369. M., 45. Left lobe of cerebellum superficially cystic. Cerebral convolutions flattened. Cord soft, no macroscopic changes. Retina "cloudy," with œdematous condition about the disc.

Landry's Paralysis.—267. F., 20. No macroscopic changes in brain or cord. Microscopically in cord a few hyaline bodies with clear outlines, at times scattered irregularly. These were larger than leucocytes, to which they bore no resemblance, were often oval in shape, stained deeply with hæmalum and methylene blue, and often had a hyaline appearance. They could be recognized under a low power of the microscope. Hour-glass contraction of stomach.

386A. M., 47. Brain and cord firm and apparently normal. Scattered through the entire length of the cord were numerous bodies of, generally, oval shape, and similar to those described as occurring in the case immediately above. In addition, in this case, many of the bodies showed a central "nucleus," which stained very intensely with hæmalum.

Myelitis.—376A. M., 17. Brain normal. Spinal column normal except for some lateral curvature in the lower dorsal region. Spinal membranes greatly congested. Transverse softening in the lower dorsal and upper lumbar region. Microscopically the softened portion was completely disorganised, the fact that it was cord being barely recognisable. Higher in the cord were tracts of degenerated fibres, which, stained by Marchi's fluid, showed themselves to involve the entire posterior columns on both sides as well as the cerebellar tracts, with isolated fibres running in other portions of the cord.

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Cerebral Hæmorrhage.—199. M., 40. Left lateral ventricle full of soft clot, right lateral ventricle full of blood-stained fluid. Brain ploughed up in left striate region. Two or three small hæmorrhages into pons. Heart 17 oz. Kidneys large and apparently normal on surface, capsules stripped with ease. Uric acid calculus in right pelvis. No sodium biurate in great toe joints. Marked absence of atheroma.

218. M., 42. Small brain. Hæmorrhage into fourth and third ventricles in which was a clot moulded to their shapes. Localised patches of blood about the base. The hæmorrhage was pontine, but had not ruptured the surface of the pons. Microscopically well-marked renal fibrosis, though organs appeared normal macroscopically.

663. F., 49. Recent blood clot in centre of left hemisphere lacerating corpus striatum and rupturing into lateral ventricle. Kidneys fibrotic macroscopically, microscopically fibrotic with superadded sub-acute tubal changes and congestion. Erosion of duodenal mucous membrane.

374A. M., 52. Large recent clot in anterior part of left hemisphere which had broken into the lateral ventricle. Also large clot in pons which had involved crura cerebri so extensively that pons cerebellum and bulb broke away from cerebrum when removing the brain. Macroscopically, kidneys red and granular, capsules stripped with fair ease, cortex diminished in thickness. Microscopically, kidneys much disorganised; even distribution of great excess of intertubal fibrous tissue; Bowman's capsules not thickened: no cysts; anterio-sclerosis.

Spina bifida.—216. F., $\frac{11}{365}$. Spina bifida size of tangerine orange in lumbar region. The wall of sac was very thin and purple in colour. Nerves entered for the most part at the upper end of sac, but some ran comparatively free through the sac and some in its walls. Much congestion and some hæmorrhage on anterior aspect of spinal canal over all length of cord, but did not involve brain, though vessels at base were abnormally congested. Double club-foot. Palate normal; urachus pervious for anterior two-thirds. Right kidney entirely hydronephrotic; upper end of ureter obliterated. Uterus prolapsed and cervix protruding beyond labia. No evidence of clitoris.

Diseases of the heart and blood vessels.—196. M., 63.

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Adherent pericardium; aortic reflux; general thickening of valves. Sudden death.

198. M., 35. Mitral, tricuspid and aortic stenosis. Heart 20 oz. Mitral "button-hole"; tricuspid admitted thumb; aortic cusps thickened. Auricles greatly dilated.

204. F., 38. Mitral stenosis, tricuspid contraction, aortic rigidity. Pericardial adhesions about base of heart.

215. F., 37. Mitral stenosis. "Cardiac failure."

242. M., 25. Aortic, ulcerative, and vegetative disease. Old infarctious kidney. Cerebral embolism leading to great hæmorrhage over base of brain and anterior surface of bulb.

246. F., 42. Ulcerative disease, aortic and mitral valves. Slight fibrosis of kidney; no infarcts.

259. M., 40. Aortic incompetence, some thickening mitral valve. "Tabby-cat" striation of myocardium.

272. F., 30. "Button-hole" mitral. Few recent vegetations on aortic cusps. "Cardiac failure"; numerous infarcts.

275. F., 12. Aortic and mitral dilatation; aortic cusps rigid and thickened. No œdema.

281. F., 48. Mitral stenosis; cardiac failure.

299. M., 70. Fibroid heart. About 4 square inches of fibrous tissue replaced apex of left ventricle. Mitral valve much thickened. Sudden death.

320. F., 54. Mitral and aortic vegetations. Adherent pericardium. Diffuse subarachnoid hæmorrhage at base of brain with disorganisation of cortex of left temporo-spheroidal lobe. "Cardiac failure."

330. F., 80. Adherent pericardium. No valvular lesions. Sudden death.

342. F., 20. Extreme mitral stenosis. Heart 28 oz. "Cardiac failure."

343. F., 48. Mitral disease chronic and recent. Embolism of left middle cerebral artery, with greenish yellow "pus" at base and much sub-arachnoid œdema. Gall-stones.

Jaundice.—349. F., 29. Extreme vegetative disease, mitral valve. "Cardiac failure." Infarcts.

351. F., 42. "Button-hole" mitral. Six months' pregnancy.

352. M., 26. Chronic mitral and aortic disease. Vegetations on mitral valve. "Cardiac failure."

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357. M., 56. Mitral stenosis; aortic thickening. No recent endocarditis. "Cardiac failure."

368A. M., 23. Chronic mitral and aortic disease. Adherent pericardium. Weight of heart and pericardium 37 ozs. Microscopically fibrosis of spleen and kidney; in latter, the fibrosis especially affected the pyramidal portions.

377A. M., 18. Chronic and recent aortic and mitral disease. Pericardium loosely adherent. Weight of heart (stripped of pericardium) 36 ozs. "Cardiac failure."

380A. F., 52. Mitral regurgitation. "Cardiac failure."

385. F., 38. Extreme mitral stenosis. "Cardiac failure."

254. M., 68. Great stenosis of anterior coronary artery; complete obstruction of posterior. Intense calcareous change. Very little general atheroma of aorta. Mitral flaps thickened. Small tubular adenoma of thyroid body. Gall-stones.

315. M., 56. Stenosis, atheroma and calcification of coronary arteries. Heart hypertrophied and fatty. Psammoma on each choroid plexus.

382. M., 30. Extensive soft atheroma of entire length of aorta and iliacs. Thickening of radial arteries, but no atheroma visible. Hæmorrhagic infarcts in lungs (several central); upper three-fourths of right kidney shrunken, and resembling chronic granular kidney, macroscopically and microscopically. The lower fourth was normal.

Diseases of the Respiratory System.

Broncho-pneumonia.—Nos. 184, 185, 190 (marked rickets); 192, 202, 205 (congenital syphilis); 206, 211 (right empyema); 220, 241, 255, 257 (early, no consolidation or collapse, mucus in fine bronchioles); 264 (much bullous emphysema); 268 (rickets); 279, 319 (diarrhœa and vomiting); 332 (pulmonary stenosis, right ventricle $\frac{3}{8}$ inch in thickness); 362 (wasting); 381A (hæmorrhagic); 384A (suppurative); 389. All in infants and young children.

Lobar Pneumonia.—193. F., 3. Double pneumonia. Grey hepatisation left lower lobe; red, right upper lobe. Turbid pleural effusion on right side. Herpes about mouth.

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213. F., 45. Entire left lung grey hepatisation. Recent parturition.

219. M., 38. Consolidation left lower lobe. Aortic cusps thickened; hypertrophy of heart.

221. M., 54. Partial and ill-defined consolidation of right upper lobe after influenza. Early and almost hæmorrhagic broncho-pneumonia of left lung. Hæmorrhages into medullary portions of adrenals.

260. M., 28. Consolidation both lower lobes. Recent pleurisy and pericarditis.

265. M., 50. Consolidation right upper and middle lobes. Unilobular fibrosis of liver microscopically.

284. M., 34. Consolidation right upper middle and upper part of lower lobe. Recent fibrinous pleurisy.

290. M., ? 55. Semi-gangrenous condition left lower lobe. Extensive calcareous atheroma. Old syphilis. Brought in dead.

318. F., 56. Left lung solid throughout, with fibrinous pleurisy, and commencing empyema at base. Early pericarditis.

Gangrene.—301. M., 37. Gangrenous focus size of tangerine orange right base; consolidation around. Pyæmic abscess left lower lobe. On right side below and behind pleura was gangrenous over a patch as large as a man's hand.

Empyema.—273. M. 1. Pus in right pleural cavity posteriorly and immediately above diaphragm. Pericardial fluid present in excess, turbid, and containing suspended grains like boiled rice.

324. F., $1\frac{8}{12}$. Septic mediastinitis and empyema. Right lung firmly adherent throughout. Collections of pus in anterior mediastinum and in different parts of right lung from apex to base. Lung itself carnified. On right side posteriorly one of the pulmonary cavities was drained. Left lung adherent below. Collection of pus immediately above the diaphragm and close to spinal column.

376. M., $\frac{3}{12}$. Right pleural cavity full of bloody fluid in which were flakes of fibrin and small numbers of pus cells. Lung partially consolidated in middle lobe; intensely hæmorrhagic over middle and lower lobes. Bullous emphysema apex of upper lobe. Microscopically a cultivation of pleural fluid

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gave an almost pure culture of encapsuled diplococci, probably pneumococci.

385A. M., $\frac{6}{52}$. Empyema posteriorly and towards base on right side. Broncho-pneumonia especially on right side, which was in part suppurative.

Pyopneumothorax.—372. M., 11. Two pints pus in right pleural cavity with air under positive pressure. Upper lobe of right lung excavated, middle and lower lobes non-adherent and carnified. Otitis media and mastoid disease.

Emphysema.—316. F., 51. Emphysema localised in both lungs, but especially entire right middle lobe. Dilatation of heart. Cirrhosis of liver.

389A. M., 58. Marked vesicular emphysema. Heart overladen with fat and dilated. Atheroma of aorta. Rectum, dysenteric ulcers. Pigment gall-stones.

Diseases of the Digestive System.

Diseases of Œsophagus.—224. M., 68. Malignant stenosis at point level with cricoid cartilage. A few enlarged glands and secondary nodules in œsophagus as far as stomach. Cirrhosis of liver. Sigmoid flexure in left inguinal hernial sac. Fatty degeneration of myocardium. Growth microscopically a squamous cell carcinoma.

249. M., 57. Malignant growth at junction of pharynx with œsophagus. Extensive sloughing above, severe stenosis below. Recent tracheotomy. Gastrostomy. Microscopically squamous cell carcinoma.

303. M., 59. Malignant stenosis about middle third. Extension of growth into trachea immediately above bifurcation. Intra-thoracic glands on right side involved in mass of dense growth reaching up to apex of lung. Hæmorrhagic infarct of liver. Right true and false vocal cords removed. Microscopically the growth was squamous cell carcinoma.

359. M., 45. Malignant ulcer of œsophagus where it crosses left bronchus, which perforated into left bronchus. Septic broncho-pneumonia, especially left lower lobe. Cysts in kidneys, which were found to be softened foci of new growth.

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Thoracic lymphatic glands involved. Microscopically a squamous cell carcinoma.

374. F., 34. Malignant ulceration in neighbourhood of larynx. Enlarged glands. Cicatrised chronic gastric ulcer. Growth a squamous cell carcinoma.

390A. M. 55. Ulcerating malignant growth where œsophagus crosses bifurcation of trachea. Ulceration into commencement of left bronchus. Glands in neighbourhood involved. Old pulmonary tuberculosis. Recent inhalation pneumonia. Microscopically the growth was a squamous cell carcinoma with few cell-nests.

Disease of Stomach.—225. F., 54. Pyloric obstruction. Wall of viscus much hypertrophied and very dense. Close in neighbourhood a cicatrised gastric ulcer. Gastro-jejunostomy. No secondary growths. Microscopically a scirrhoid spheroidal cell carcinoma.

237. M., 44. Soft ulcerated growth of anterior wall of stomach, greater convexity and much of the lower posterior surface, situated midway between cardiac and pyloric orifices. Pus and purulent ascitic fluid in abdominal cavity. No secondary deposits except in glands of portal fissure. Microscopically a spheroidal cell carcinoma.

392. F., 35. Pyloric malignant ulceration. Stomach dilated. At pylorus an ulcer consisting of two distinct parts, that directed more towards the gastric cavity was cicatrised and was adherent, externally to the liver, the other was directed towards the pylorus and was fungoid. The combined ulcers were as large as a five-shilling piece. Microscopically much disorganisation, but apparently a scirrhoid spheroidal cell carcinoma was present.

293. F., 34. Growth involving the entire wall of the stomach, causing great thickening of wall, and diminution of cavity. Chronic peritonitis. Large abscess cavity between spleen and stomach. Gastric growth extended to and involved liver, producing a growth the size of a man's fist. Pancreas not affected by growth. Microscopically a much degenerated *squamous* cell carcinoma. Œsophagus appeared to be free down to the cardiac orifice.

355. M., 49. Entire wall of stomach invaded by soft and

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often polypose growth, thickness of wall ¾–1 inch. Numerous enlarged glands in neighbourhood. Pancreas surrounded by and invaded by growth. Peritoneal membrane everywhere studded with small nodules. No secondary growths in liver. Microscopically a greatly degenerated spheroidal cell carcinoma. Pyæmic abscess about left ankle joint; consolidation right lower lobe; right knee joint full of pus.

361. F., 57. Malignant disease extending 2½ inches above sphincter pylori; great stenosis. Numerous deposits in liver and in lymphatic glands at portal fissure. Microscopically a columnar cell carcinoma, transitional in places.

Diseases of Intestine.

238. M., 70. Growth at splenic flexure. Lumbar glands much enlarged. Microscopically a spheroidal cell carcinoma, becoming colloid.

256. F., 58. Growth at sigmoid flexure; great stenosis. No secondary deposits. Gall-stones. Microscopically a columnar cell carcinoma.

274. F., 47. Growth at sigmoid flexure, which ulcerated through the gut, so that the descending colon and upper end of rectum opened into a ragged cavity, bounded in front by the uterus and behind by the left sacro-iliac synchondrosis. Cavity contained pus and fæces. Numerous adhesions in neighbourhood. Microscopically a columnar cell carcinoma.

322. F., 62. Growth at sigmoid flexure. Abscess cavity on outer side of gut. Enlarged glands in neighbourhood. No microscopical examination made.

372A. M., 69. Growth at sigmoid flexure. Little ulceration; great stenosis. No secondary deposits. Microscopically a columnar cell carcinoma.

394. M., 57. Growth, six inches beyond ileo-cæcal valve, in ascending colon. Partial examination only. Microscopically a columnar cell carcinoma.

Duodenal Ulcer.—391A. M., 34. Ulcer, size of shilling, at commencement of duodenum, which perforated and set up general peritonitis. Plentiful fibrin was found on the intestines

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at the laparotomy performed 11 hours after perforation. Chronic thickening of tissues in neighbourhood of ulcer.

Duodenal Cyst.—378A. M., 44. Cyst, size of large chestnut, in posterior wall of duodenum immediately beyond pylorus. Fibrous thickening of surrounding tissues, forming loculated cavities about the portal fissure. Recent fibrin over convexity of liver. Pyloric orifice slightly stenosed, stomach elongated and wall hypertrophied. Microscopically the wall of the cyst showed internally a normal mucous membrane, outside which lay a hypertrophied muscular coat. Still further outwards was connective tissue greatly infiltrated with leucocytes, and the vessels of which were highly congested. There was no evidence of malignancy.

Appendicitis.—239. F., 31.—Appendix vermiformis gangrenous. General peritonitis. No evidence of previous attacks.

339. M., 20. Perityphlitic abscess; appendix nearly disappeared. The abscess cavity communicated with the gut and lay in the substance of the iliacus and psoas muscles; it opened externally in the right groin.

383. M., 9. Localized perityphlitic abscess, operation. No general peritonitis; great distension of upper portion.

Ulcerative Colitis.—364. M., 38. Great distension from ileo-cæcal valve to sigmoid. Numerous large perforations and slits in gut, mucous membrane in shreds and necrotic in many places. Sigmoid flexure incarcerated in left inguinal hernia; intestine in hernia not ulcerated. Rectum dilated and hypertrophied, but otherwise normal. Microscopically focal necroses in liver, organ much enlarged (weight 6¼ lbs.), no increase of fibrous tissue.

Intestinal Obstruction.—297. F., 28. About 3 feet of ileum, lowest point of which was 6 inches above ileo-cæcal valve, deeply congested and in places gangrenous. Formerly strangulated by two bands, one of which was in connection with a Meckel's diverticulum. General peritonitis.

Diarrhœa.—Nos. 325, 333, 338, 347, 350. Infants under one year of age.

Dysentery.—331. M., 5. Large intestine throughout injected and seat of numerous small ulcers; the mucosa greatly swollen, and covered with mucus and greenish, sloughy mem-

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brane. One of a series of five cases with similar symptoms occurring in July, 1900, in one block of buildings in London. Four of the five died; in three autopsies were made, and in all the three the appearances in the large gut were the same.

389A. M., 58. Rectal mucosa shreddy, and black in colour. Bronchitis and emphysema. Gall-stones.

Suppuration in Liver.—240. M., 12. Liver 5¼ lbs. Abscess, size of man's fist in right lobe close to portal fissure, with numerous subsidiary abscesses around. Pus in many dilated bile ducts at a distance from the abscess and in gall-bladder. Right adrenal completely disorganised by suppuration. Microscopically pus of chronic type, no micro-organisms could be found in it. Intestines (in particular, the appendix) and stomach quite normal.

276. F., 38. Abscess in right lobe size of man's fist, with several smaller cavities in neighbourhood. Wall of gall-bladder adherent and thickened. Ovaries and Fallopian tubes contained cheesy material and were microscopically tubercular (*B. tuberculosis* not found). Numerous nodules of small size over entire peritoneal membrane. Two ulcers of stomach, one on posterior wall cicatrised, one on anterior wall partially cicatrised.

295. F., 21. Small abscess in left lobe of liver, and subdiaphragmatic abscess. Appendix bound down, but apparently normal internally. Localised collections of pus in pelvis behind peritoneum and in iliaco-psoas sheath.

Cirrhosis of Liver.—200. M., 43. Liver 4 lbs. 11 oz., tough and finely-grained surface. Ascites. Microscopically a small amount of multilobular fibrosis with atrophy, fatty degeneration, and, in places, pigmentation of hepatic cells. In addition a very extensive and severe infiltration of fibrous tissue with leucocytes. In places, evidence of new formation of bile ducts. Apparently acute hepatitis superadded upon ordinary fibrosis.

253. F., 64. Liver 2 lbs. 14 oz., pale and intensely fibrotic. Ascites. Dermoid cyst of left ovary.

345. M., 48. Liver 4¼ lbs., very tough. Chronic peritoneal thickening and adhesions. Omentum gathered into thick mass, which lay transversely in the abdomen. Ascites.

387. F., 51. Liver 4¾ lbs. Multilobular type of fibrosis. Ascites.

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Icterus neonatorum.—335. M., $\frac{3}{365}$. Intense jaundice. Liver olive-green in colour, gall-bladder moderately distended. Probe passed into common duct from duodenal opening and thence into right and left hepatic ducts.

Suppurative Peritonitis.—280. F., 7. Intense peritonitis of adhesive type; signs of suppuration in places, but mainly fibrin present. No pathological condition found to account for the peritonitis.

383A. F., 8. A pint of creamy pus in abdominal cavity, general peritonitis. Stomach, intestines, and generative organs normal. Streptococci obtained in pure culture from pus. No organisms found in films prepared directly from pus.

Malignant disease of pancreas.—207. M., 46. Pancreas in whole length, but especially about head, was seat of a dense new growth. Some adhesions but organs still partially moveable. Enlarged glands in hilum of liver. Small secondary nodules of growth in liver. Marked but not intense jaundice. Congenital cystic disease of both kidneys. Microscopically a spheroidal cell carcinoma.

380. M., 47. Left portion of pancreas seat of a softened new growth the size of the fist. Some recognisable "pancreatic" tissue about the head of the organ. Numerous secondary nodules in liver. No jaundice. Slight ascites, marked œdema of legs. Microscopically a spheroidal cell carcinoma, the cells of which were very large and the alveoli rather small. During life about 70 ounces of urine, containing 20 grams of sugar, were passed in the twenty-four hours.

Diseases of the Urinary System.

Nephritis.—286. M., 5. Large white kidney. General anasarca; ascites. Microscopically typical tubal nephritis with congestion about pyramids. No evidence of fibrosis. Œdema of optic discs and infiltration with numerous leucocytes, the same condition obtaining along the optic nerve. Lamina cribrosa greatly fibrosed.

Chronic Fibrosis.—188. F., 47. Kidneys $3\frac{1}{2}$ oz. each, macroscopically granular, microscopically marked fibrosis and congestion. Heart 20 oz.; great hypertrophy of left ventricle;

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great atheroma of entire aorta. Eczema both legs, with bullæ over dorsa of both feet.

201. M., 31. Kidneys, R. 8, L. 6 oz. Microscopically definite fibrosis, especially of Bowman's capsules and between straight tubules. Heart 17 ozs. Sub-pericardial hæmorrhages. Excess of cerebro-spinal fluid. Pia mater thick and opaque. (Uræmia.)

210. F., 67. Kidneys, R. 4, L. 5 oz. Heart 15 oz. Old tuberculosis left upper lobe; rest of lungs engorged and œdematous. Liver nutmeg. Œdema of both legs.

214. M., 67. Kidneys, R. 4, L. 5 oz. Heart 15 oz. Coronary vessels extensively calcified.

258. M., 67. Kidneys, R. 3, L. 3½ oz. Heart 17 oz. Pericarditis with much fibrin.

306. M., 50. Kidneys each 4 oz. Heart 12 oz. Uratic deposit in joints. Tubercular peritonitis. Grey hepatisation (non-tubercular) of right upper lobe.

353. M., 57. Kidneys each 4½ oz. Heart 26 oz. Small cerebral hæmorrhage posterior limb of left internal capsule. Basilar and middle cerebral arteries calcareous and atheromatous. Retinitis. Gall-stones.

363. F., 49. Kidneys, R. 1, L. 5 oz. Heart 15 oz. Large cerebral hæmorrhage left side. Small ulcer in duodenum. Microscopically kidneys showed chronic fibrosis, with sub-acute tubal changes superadded.

368. M., 54. Kidneys each 6 oz. Heart 29 oz. Deposit of sodium biurate in great-toe joints. Microscopically kidneys showed marked fibrosis and much congestion.

374A. M., 52. Kidneys each 4½ oz. Heart 11 oz. Large cerebral hæmorrhage left side. Deposit in great-toe joints. Microscopically kidneys markedly fibrotic, but no thickening of Bowman's capsules and no cysts. Middle coats of arteries thickened.

375A. F., 45. Kidneys, R. 4½ ozs., L. ½ oz.; heart 19 ozs.; recent pericarditis. No œdema except of lungs. Gall-stones.

Calculous pyonephrosis.—348. F., 27. Left kidney 12 ozs. Pyonephrotic, but renal tissue recognisable in fair quantity; branched calculus in pelvis partially occluding ureter. Right kidney unrecognisable as such; ureter apparently normal.

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Death five days after operation on right kidney, from which a calculus was removed. Intense lardaceous reaction of tissues.

Diseases of the Supra-renal Bodies.

Addison's disease.—250. M., 20. Emaciation; marked pigmentation, especially of face. Quiescent tuberculosis upper lobes both lungs. Heart 7 ozs. Adrenals seat of extensive caseous tuberculous changes. Great hypertrophy of all lymphoid tissue in intestines.

314. M., 15. Emaciation; marked pigmentation fairly general. Quiescent tuberculosis both upper lobes of lungs. Adrenal bodies caseous and in places calcareous. Hypertrophy of peyerian patches and solitary follicles in ileum.

Diseases of Organs of Locomotion.

Gangrene.—247. M., 74. Gangrene of left thigh in upper part. Vermiform appendix bound down by adhesions. Irregular abscess cavity containing foul pus beneath fascia covering psoas and iliacus muscles, and dissecting out the nerves. Abscess travelled into thigh involving femoral vessels, the artery being thickened and its lumen narrowed, and the vein containing softened adherent clot. No evidence that the condition of the appendix was recent.

323. M., 66. Gangrene of right foot. Vessels calcified.

Osteo-myelitis.—263., F., 10. Suppurative condition of medulla of right tibia. Commencing abscesses of lungs.

Diseases of the Generative Organs.

Enlarged prostate.—337. M., 81. General enlargement but especially of middle lobe. Bladder dilated, mucosa thickened. Cystitis. Suppurative nephritis. Hypostatic pneumonia.

378. M., 70. Enlarged lateral lobes; stump of middle lobe. Bladder contracted; intense cystitis. Kidneys slight senile fibrosis. Old pulmonary tuberculosis with recent consolidation around.

Malignant disease of Cervix.—195. F., 44. Ulcerated growth on left side, continuous with numerous soft masses in

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Douglas's pouch which pressed upon rectum but had not invaded its walls. No secondary nodules found elsewhere.

Malignant Cystadenoma of Ovary.—251. F., 43. Growth in right appendages size of orange and soft; on left side a smaller growth of dense consistency, and lightly bound down to pelvis. This growth involved sigmoid flexure which was sharply bent on itself, and led to acute intestinal obstruction. Numerous nodules of growth studded over great omentum, mesentery, diaphragm, over liver, and at hilum of spleen. Lumbar glands much affected.

Ovarian Cyst.—285. F., 53. Multilocular ovarian cyst, weighing intact 20 lbs. 12 ozs. Involved left ovary, and reached nearly to ensiform cartilage. Numerous fibromata of uterus, which was about size of child's head. A very few loose adhesions about the ovarian cyst.

Pelvic Suppuration.—379A. F., 21. Pelvic viscera matted together by old adhesions. In left broad ligament a collection of creamy pus. Appendages indistinguishable. Uterus fairly normal. Suppuration involved, secondarily, right hip-joint, and led to extensive caries of acetabulum and upper part of femur. No evidences of tuberculosis in body. Cause of condition unknown.

Operations, Accidents, and Conditions, not included above.

Rupture of Liver.—197. M., 13. "Run over." Liver practically divided into two portions along line of falciform ligament. Simple fracture of humerus.

356. M., 32. "Run over." Entire right lobe lacerated. Transverse fracture of gladiolus sterni and numerous ribs.

Fractures and Dislocations:—

Skull: Nos. 187, 236, 340, 367, 370 (gunshot).

Spinal Column: Nos. 186 (lumbar region); 187 (dislocation 4 and 5 cervical); 271 (fracture-dislocation dorsal region, with fracture of ribs and numerous other injuries).

Ribs: Nos. 288, 305 (also pelvis); 344 (also femur, and transverse process of 2nd lumbar vertebra); 358.

All the above in males above the age of 45 years.

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Burn.—346. F., 52. Burn of second degree, involving entire anterior and most of lateral aspects of trunk, lower two-thirds of face, two arms and forearms on flexor aspects, and anterior aspects of thighs.

Poisoning by Nitric Acid.—194. M., 48. Slight desquamation of epithelium over tongue and soft palate; œsophagus "satiny" in appearance over upper two-thirds, lower third denuded of epithelium. Stomach and first and second portions of duodenum black in colour; mucous membrane tumid and corrugated. Perforation at fundus of stomach. Spleen ½ oz., shrivelled to an extreme degree, firm and olive green in colour.

C.—The Museum.

The principal point to mention with reference to work in the Museum is that during the first fortnight of October, 1900, the specimens that had been prepared during the previous year were placed on view on one of the tables. They were 89 in number and a description is subjoined. It is hoped that similar Exhibitions will open on October 1st of succeeding years. The Museum is becoming inconveniently crowded, and steps are being taken at the present time to arrange for further accommodation of specimens.

The fact that the initial preparation of specimens is now carried out in the post-mortem room, where full arrangements for carrying out the formalin method have been made, enables many specimens to be put up which, under former arrangements, would have been irretrievably damaged in their transit to the school. The existence of a large fume-cupboard in the clinical laboratory, too, allows of maceration of bones under the most satisfactory circumstances.

The co-operation of old Westminster men in providing rare specimens for the Museum is earnestly asked. The Curator cannot undertake that all specimens sent will be permanently mounted and placed on the shelves, but every specimen will receive due attention.

A Catalogue of the pathological specimens added to the Museum for the year ending September 30th, 1900, is subjoined.

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PATHOLOGICAL SPECIMENS RECENTLY ADDED TO THE MUSEUM.

SERIES I.—ATROPHY AND ARRESTED GROWTH OF BONE.

Atrophy from Disuse.

4B. Section through the upper part of a tibia. Only a small portion of the articular cartilage remains, the rest having disappeared as the result of tubercular arthritis. The bone is light and shows a thin compact layer and wide cancellous spaces, the result of general atrophy from disuse. Fibrous anchylosis had taken place between the tibia and femur, the bones being fixed at right angles to one another.

No further history.

SERIES III.—OSTEITIS DEFORMANS.

6A. A left tibia which is affected with osteitis deformans. The bone is curved anteriorly and shows much thickening of the compact tissue at the back of the curve. The medullary cavity is much enlarged, the osseous tissue generally is in great part converted into spongy porous bone; but whether this latter change is wholly or in part due to excessive maceration is doubtful.

From the body of a man, æt. 79, who died of the results of enlarged prostate. The other tibia and both fibulæ were similarly affected, the skull-cap was dense, thick and ivory-like. No other bones were sclerosed, but numerous bosses of bone were found on the bodies of the vertebræ and some about the joints. All the articular cartilages were normal. In the recent state the medulla of the upper two-thirds of the tibia were red and soft, and under the microscope showed numerous red blood corpuscles and eosinophilous leucocytes with round or oval nuclei. In the lower third of the bone the medulla was soft and yellow. *Vide* P.M. and Case Book, Vol 9, No. 200.

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SERIES VIII.—FRACTURES AND DISLOCATIONS.

Dislocation of Cervical Vertebræ.

75A. A vertical section of the spinal column from the 3rd cervical to the 1st dorsal vertebra inclusive. The intervertebral disc between the 5th and 6th cervical vertebræ has been torn through, with the result that the upper part of the column has been displaced forwards. There is no fracture of the spinous, transverse or articular processes. The anterior common ligament is torn and the posterior partially so.

This and the following specimen are from a man, æt. 40, admitted to the Hospital after a heavy fall. Consciousness was present on admission. The breathing was chiefly diaphragmatic, but there was some costal movement. There were complete paralysis and loss of sensation in the upper and lower extremities and in the trunk, with the exception that some sensation existed over the deltoid and upper part of the triceps muscles. Incontinence of fæces, true incontinence of urine and constant vomiting were other symptoms. Cyanosis and a rise of temperature to 105·6° preceded death, which occurred the day after the accident. The skull was also extensively fractured. *Vide* P.M. and Case Book, Vol. 11, No. 187.

Dislocation of Cervical Vertebræ (dry specimen).

75B. The opposite side of the spinal column to that shewn in the preceding specimen, the bones having been macerated.

Repair of Cartilage by Bone.

125A. Portions of the 8th, 9th, 10th, and 11th ribs of the left side, together with their costal cartilages. The latter have been cut through close to their junction with the sternum. The cartilages of the 9th and 10th ribs are the seat of an ununited fracture, with displacement of the outer fragments forwards and inwards and slightly downwards. The fractured ends of the cartilages have been held together by a deposit of true bone from the perichondrium, but that the joint so formed is a false one can be readily seen by looking at the specimen from behind. It will also be noticed that small bone deposits have occurred at the junction of the ribs and their cartilages in the case of the 8th, 9th, and 10th.

Accidentally found in the body of a middle-aged man.

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Fracture of Clavicle.

132A. A left clavicle which has been obliquely fractured about its middle. The plane of fracture passes from below, upwards, and inwards. The injury is the result of indirect violence. *Vide* P.M. and Case Book, Vol. 11, No. 305.

SERIES IX.—INFLAMMATION OF BONE.

Caries and new Deposit of Bone.

151A. Part of the shaft of a tibia. A thick layer of new bone has been laid down by the periosteum in spicules set at right angles to the shaft. The compact tissue of the shaft is thick and spongioid in character, and the medullary cavity is partially occupied with bone of a similar nature.

There is no record of the case.

Senile Tuberculosis.

170A. The upper extremity of a humerus affected with tubercular disease. The cartilage covering the head has entirely disappeared, the exposed bone is rough and spongy, and part of the neck has been destroyed by ulceration.

Removed by operation from an old man, who died a few days later. *Vide* Clin. Lab. Rep., Vol. 1, No. 108.

SERIES X.—NECROSIS OF BONE.

Osteomyelitis.

214A. A vertical section through the shaft of a right tibia which is affected with acute infective periostitis and osteomyelitis. The periosteum has been widely stripped from the bone, and the latter in almost its entire extent is bare. The epiphysial lines are well seen. The lower epiphysis is separated from the shaft, an abscess cavity existing in the recent condition between them. The medullary cavity in the middle third of the shaft is of a dark red colour and infiltrated with inflammatory products.

From the body of a girl, æt. 10. Notes of the case are wanting. At the autopsy general pyæmia was found. *Vide* P.M. and Case Book, Vol. 11, No. 263.

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SERIES XIII.—TUMOURS OF BONE.

Bony Bridge between Ribs.

246A. Two ribs, with portions of their costal cartilages. A bony outgrowth is connected with each rib, and in the recent condition these two processes appeared to be intimately connected with one another. Maceration, however, shows that their connection is not osseous. It is impossible to say whether this condition is congenital, or the result of injury, or due to ossification in the muscular or tendinous planes of the internal intercostal muscles.

Found in the post-mortem room.

Sarcoma.

251A. The upper end of a left humerus macerated to show the effects produced by the growth of a central sarcoma. The bone is perforated in several places posteriorly. The whole of the central portion, including the head, is hollowed out, the latter consisting of a mere shell of bone, which has been displaced backwards and downwards from its original position.

The specimen had long been in the museum (No. 247), but had deteriorated so much as to be useless; it was used for experiments in maceration with the result here shown.

256A. A vertical section through the greater part of a right lower extremity removed by amputation. The upper half of the tibia shows an extensive sarcomatous growth which has originated within the central portion of the head. Deposition of lime salts and the formation of cartilage is apparent here, and the destruction of bone by the growth has allowed large masses of the growth to infiltrate the calf muscles in the vicinity. Secondary infiltrations and deposits may be noted in: (1), the lower and fore part of the knee joint; (2), the ligamentum mucosum; (3), the lower end of the femur (where the cartilage has been partially destroyed) and posterior part of the joint; (4), the pocket under the quadriceps; (5), the lower end of the tibia.

The growth is a round cell sarcoma. Notes of the case are not obtainable.

259A. The right half of a child's lower jaw. A sarcomatous growth occupies the horizontal ramus from the symphysis to the angle. It has arisen within the bone, and pieces of the outer wall, much thinned, can be seen, covering the tumour.

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The swelling is elastic to the touch, and "egg-shell crackling" can be produced by manipulation. The alveolar border is displaced inwards, and the milk teeth are irregular in position.

No history.

SERIES XV.—DISEASES OF JOINTS.

Ankylosis.

367A. A longitudinal section of a femur and tibia which are united at an angle with one another by bone. The ends of the bones are wired together.

The patient from whom the specimen was obtained was a young man, æt. 19. Thirteen years before admission he was a patient at Charing Cross Hospital, where excision of the knee-joint was performed for tubercular disease. He left the Hospital with the limb in plaster and only slightly bent, but as he grew the degree of flexion increased till the limb was useless. He was admitted on the present occasion for disease about the hip-joint. The limb was removed through this joint, and five weeks later the man was doing extremely well. *Vide* Clin. Lab. Rep., Vol. 1, No. 237.

SERIES XXI.—DISEASES OF THE TONGUE.

Fibroma.

411A. A portion of a tongue showing a fibroma in section. The growth is white in colour, of cartilaginous hardness, and projects above the level of the organ. It was removed under the impression that it was carcinomatous, but microscopical examination showed that this is not the case. It is almost as sharply defined from the surrounding tissue when examined in microscopic section as it is when viewed by the naked eye.

The patient was a man, æt. 68. The growth had existed for a long time but had recently increased in size. No enlarged glands were at any time felt. The patient left Hospital perfectly well. The possibility that the growth is an intensely hard fibro-sarcoma cannot be fully excluded by the microscope. *Vide* Clin. Lab. Rep., Vol. 1, No. 55.

SERIES XXIII.—INJURIES AND DISEASES OF THE PHARYNX AND ŒSOPHAGUS.

Post-œsophageal Abscess.

422A. A larynx and part of the œsophagus. A small abscess cavity is situated behind and on the left side of the latter.

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It communicates by a small orifice with the cavity of the larynx. The opening is situated towards the posterior part of the larynx, just below the left true vocal cord.

From the body of a woman, æt. 62. Ten weeks before death she swallowed a fish-bone, which "went the wrong way." This was subsequently followed by pain in the chest, cough and copious expectoration. Temperature hectic.

At the autopsy a chronic abscess cavity was found behind the upper part of the œsophagus and in front of the carious bodies of the 7th cervical and the upper dorsal vertebræ. This cavity communicated with a cavity in the upper lobe of the right lung, with these two cavities a small abscess situated above, communicated, and it is the last-mentioned of these which is shown in the specimen. *Vide* P.M. and Case Book, Vol. 10, No. 83.

Malignant Disease.

425A. Malignant disease of the lower part of the pharynx and upper part of the œsophagus. The epiglottis and aperture of the glottis are seen in front, and appear to be free from disease. The whole of the pharynx on the right side is the seat of a malignant growth, which has ulcerated extensively, and caused much destruction of the adjacent structures. A small portion of the pharynx on the left side is unaffected. Portions of the growth in a sloughy condition can be seen in several places. The upper part of the œsophagus is partly stenosed by a growth which projects into its lumen.

From the body of a man, æt. 57. Symptoms pointing to the throat commenced about seven-and-a-half months before death. Difficulty in swallowing rapidly supervened, and became so severe that gastro-jejunostomy was performed. The patient made a good recovery so far as the operation was concerned, and was discharged six weeks after it was performed; but the throat symptoms became aggravated, and it was necessary for him to be re-admitted two days after his discharge in order to perform tracheotomy. He died five days later of exhaustion. At the autopsy the cervical glands were found to be infiltrated with new growth, but there were no other secondary deposits in the body. The growth is a squamous cell carcinoma. *Vide* P.M. and Case Book, Vol. 11, No. 249.

429A. Part of an œsophagus laid open from behind. A dense growth is apparent which completely encircles the lumen for about 1 inch. The site of the growth is immediately below the cricoid cartilage. Numerous small nodules are visible under the œsophageal mucosa as far as the cardiac orifice: the greater number of these are "warts" or localised thickenings of the epithelium, but a few are true nodules of growth. There is no ulceration of the surface. Microscopically it is a squamous cell carcinoma. There were found two slightly enlarged glands in the neighbourhood, but no other secondary growths were present.

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The patient from the body of whom the specimen was obtained gave a history dating from four months before death. He was admitted in a dying condition. *Vide* P.M. and Case Book, Vol. 11, No. 224.

431A. The larynx, trachea with the right and left bronchi, and the œsophagus. The larynx and trachea have been opened from the front. The right vocal cord is seen to have disappeared (it was paralysed and was removed to render respiration easier). Three rounded masses of malignant growth are situated on the posterior wall of the trachea near the origin of the bronchi: they are ulcerated on the surface. Two large portions of the growth are seen filling the lumen of the œsophagus.

From the body of a man, æt. 59. History unknown. See also No. 542A. *Vide* P.M. and Case Book, Vol. 11, No. 303.

SERIES XXIV.—DISEASES OF THE PERITONEUM.

Peritoneal Cyst.

436A. A mass consisting of several inter-communicating cysts which was removed from the peritoneal cavity in the region of the right iliac fossa. The cause of its origin is unknown.

A similar specimen is recorded by Mr. Stonham. *Vide* Trans. Path. Soc., Lond., Vol. 39, 1888, p. 149. The patient from whom the specimen was obtained was a woman, æt. 47, who was admitted for a large ovarian tumour, which was removed. The peritoneal cyst was accidentally discovered at the operation when searching for the right ovary. The patient made a good recovery. *Vide* "Arden Ward" Notes, 1900, No. 92.

Peritonitis.

436B. A piece of small intestine, the peritoneal coat of which is acutely inflamed. Thick fibrin covers the wall in places, and there is considerable vascular injection.

From the body of a woman æt. 31, who died of acute peritonitis, following gangrene of the vermiform appendix (see No. 498). The patient aborted a few days before death (see No. 1090A). *Vide* P.M. and Case, Vol. 11, No. 239.

Tuberculosis.

436C. A piece of diaphragm showing the peritoneal and pleural coverings and intervening muscular tissue. Numerous yellowish confluent tubercles are scattered under the peritoneal coat.

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From the body of a male infant, æt. 9 months, who died of tubercular peritonitis and empyema. The right lung showed the presence of caseous tubercles close to the pleura, but the left lung was apparently free. See specimen 436D. *Vide* P.M. and Case Book, Vol. 11, No. 269.

436D. The stomach and spleen from a case of tubercular peritonitis. Tubercular foci can be seen under the peritoneal coat of the stomach along the smaller curvature. The external surface of the spleen is covered with yellow fibrin, and the section of the organ shows many tubercles in its substance. Several softened caseous foci can be seen between the spleen and stomach near the cardiac orifice of the latter.

From the same case as No. 436C.

Malignant Disease.

437A. A piece of the diaphragm with the pleural and peritoneal coats, and intervening muscular tissue. The peritoneal surface is covered with yellowish raised nodules secondary to a malignant growth.

From the body of a woman, æt. 43, who died from intestinal obstruction, the result of pressure on the sigmoid flexure by a malignant cystadenoma of the ovary. The appendages on both sides were affected, growth being most abundant on the right, but densest on the left side. The peritoneal cavity was studded all over with secondary nodules of growth. *Vide* P.M. and Case Book, Vol. 11, No. 251.

SERIES XXV.—DISEASES OF THE STOMACH.

Nitric Acid Poisoning.

443A. A small part of the pharynx, the glottis, œsophagus, and stomach from a case of nitric acid poisoning. The mucosa at the upper part is reddened and corroded. Further down the œsophagus corrosion has occurred in places, and in others the undetached membrane is of an ash-grey colour, and has a "satiny" appearance. The mucous membrane of the stomach is corrugated, and almost black in colour. Between its folds reddened inflamed areas may be seen. At the fundus of the stomach was a perforation the size of a shilling.

From the body of a man, æt. 48, who committed suicide. *Vide* P.M. and Case Book, Vol. 11, No. 194.

Lymphadenoma.

455A. A portion of the stomach which is the seat of lymphadenomatous growths. The growths project above the

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surface as rounded swellings varying from the size of a marble to that of a pea.

From the body of a girl, æt. 20, whose symptoms lasted about 2½ years. At the autopsy great enlargement of cervical, axillary, thoracic, and abdominal glands were found. Growths similar to those in the stomach were present in the duodenum, but the rest of the intestinal tract was normal. Secondary deposits in spleen. *Vide* P.M. and Case Book, Vol. 10, No. 250.

Carcinoma.

465A. A stomach the seat of malignant disease which has invaded the liver on its under surface. The stomach has been laid open posteriorly from the œsophagus to the duodenum. The mucous coat through almost its entire extent is the seat of malignant disease, which forms large sprouting masses nearly filling the cavity of the organ. Microscopically the growth is an intensely cellular spheroidal cell carcinoma.

From the body of a man, æt. 44. The first onset of symptoms was about twelve months before death, when the patient was treated for dyspepsia, but there was no history of vomiting. The diagnosis was extremely doubtful, for though the patient had wasted severely, the shape and position of the mass felt in the abdomen, and the marked anæmia present, suggested that the mass was an enlarged spleen. At the same time, there was a complete absence of symptoms pointing to the stomach as the seat of disease. *Vide* P.M. and Case Book, Vol. 11, No. 237.

466A. The stomach, with part of the œsophagus and duodenum. The wall of the stomach is almost entirely replaced by a firm malignant growth. The cavity is greatly reduced in size. The growth is a squamous cell carcinoma.

From the body of a woman, æt. 34. The entire duration of symptoms was five months, but there was a history of "indigestion" lasting over 2–3 years. At the autopsy the gastric growth was found to have invaded the liver, where it formed a mass as large as the fist. An abscess cavity existed between the stomach and spleen, and extending behind the stomach reached to the pancreas. There were deposits of growth in some of the abdominal lymphatic glands. Microscopically the growth had undergone much degeneration, but parts are present which leave no doubt as to its nature. *Vide* P.M. and Case Book, Vol. 11, No. 293.

SERIES XXVI.—INJURIES AND DISEASES OF THE INTESTINES.

Hyperplasia of Peyer's Patches.

472A. A portion of the ileum and cæcum of a child, showing great enlargement of the adenoid follicles and Peyer's patches, due to general hyperplasia.

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From the body of a female child, æt. 10 months, who was dead when brought to the Hospital. It weighed 18 lbs., and was very fat. Beyond the presence of an abnormal development of the lymphoid tissue throughout the body, nothing noteworthy was found, and the cause of death remained undiscovered. It was, however, excessively hot weather even for July. *Vide* P.M. and Case Book, Vol. 11, No. 308.

Lymphangiectasis.

472B. The duodenum and commencement of the jejunum. The mucosa is covered with closely-set villous processes, which give it a shaggy appearance. In the recent condition the mucous membrane was much congested though the villous projections were white. The condition is one of lymphangiectasis.

From the body of a man, æt. 38, who had suffered for some months from intermittent attacks of diarrhœa and vomiting. Emaciation ensued, and he died of exhaustion. With the exception of the intestinal condition, which affected the whole of the small intestine, the viscera were normal. *Vide* P.M. and Case Book, Vol. 8, No. 341.

Necrotic Ulcers.

474A. The termination of the ileum with part of the ascending colon. The mucosa is congested, and shows several whitish flattened areas which are ulcerated on the surface and are semi-gangrenous.

The specimen is from a man, æt. 44, who exhibited the general symptoms of lardaceous disease due to syphilis. Microscopically there is intense infiltration of the submucosa with polymorphonuclear leucocytes, and sloughing of the mucosa in the white patches; and an intense congestion with local foci of degeneration in the red. See No. 784A. *Vide* P.M. and Case Book, Vol. 10, No. 313.

Tubercular Ulcers.

492A. Three pieces of small intestine, the seat of tuberculous ulcers. The ulcers lie across the long axis of the gut, and the edges and base are irregular and thickened from the presence of tubercular nodules. The presence of miliary tubercles on the peritoneal surface of the gut and the method after which they infect the lymphatics passing to the mesenteric attachment is well shown.

From the body of a girl, æt. 12, who died of tuberculous peritonitis. Vomicæ were present in the apices of both lungs. The abdominal symptoms were only of about one month's duration, but pulmonary signs had existed for three months. There was severe diarrhœa. *Vide* P.M. and Case Book, Vol. 11, No. 283.

Malignant Disease.

494B. Part of the colon at the site of the splenic flexure. A firm growth completely encircles the wall of the gut for

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about 3 inches. Some ulceration of the surface is present. Microscopically the growth is a spheroidal cell carcinoma undergoing colloid degeneration.

From the body of a man, æt. 70, whose illness commenced nine months before death with languor and loss of appetite. There was no history of pain or vomiting, but there was slight constipation. On admission the abdomen was seen to be distended on the right side, and a hard irregular mass was felt behind the umbilicus and extending about two inches on either side of it. The patient gradually sank. *Vide* P.M. and Case Book, Vol. 11, No. 238.

Appendicitis.

498. A vermiform appendix and a portion of the cæcum. The former is of considerable length, and shows two gangrenous patches and one distinct perforation about the size of a goose-quill. The appendix itself communicates by a minute aperture with the cæcum.

From the body of a woman, æt. 31, who was admitted under the obstetric physician for threatened abortion, which soon supervened. At the autopsy severe general suppurative peritonitis was found, together with the condition of the appendix shown in the present specimen. There were no old adhesions about the appendix or other signs of previous attacks of appendicitis. See also specimens Nos. 436B and 1090A. *Vide* P.M. and Case Book, Vol. 11, No. 239.

501A. The cæcum, with the termination of the ileum, the commencement of the vermiform appendix, and a portion of the iliacus and psoas muscles. The appendix has almost totally disappeared, its root being glued to the muscular tissue. The termination of the ileum and the ileo-cæcal valve are shown in the specimen. During life fæcal matter passed into a pocket behind the valve, and then obliquely forward through the remains of the appendix into an abscess cavity which is situated in the substance of the iliacus muscle, and opened externally in the right groin. In the recent condition fæces had tracked upwards from the top of the abscess beneath the sheath of the psoas to the summit of the right kidney close to the vertebræ.

History.—The patient, a youth, æt. 20, was admitted with marked symptoms of appendicitis. He had then been ill for a little over a week. There was no previous history of a similar attack. At the operation, the appendix was found in a pool of pus, and was removed, the wound being closed. The wound subsequently re-opened, and the patient rapidly emaciated, and died five weeks later, a persistent fæcal fistula having formed. *Vide* P.M. and Case Book, Vol. 11, No. 339.

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SERIES XXIX.—INJURIES AND DISEASES OF THE LIVER.

Hæmorrhagic Infarct.

542A. Part of a liver which has been mounted to show the presence of hæmorrhagic infarct.

From the body of a man, æt. 59, who died of malignant disease of the œsophagus. (See No. 431A). Secondary nodules of growth were found in the cervical and bronchial glands, but not elsewhere. *Vide* P.M. and Case Book, Vol. 11, No. 303.

Cirrhosis (? Syphilitic).

545A. Part of the liver of a child. The surface is studded with nodular masses separated by shallow sulci. The cut surface shows numerous, yellowish, rounded areas of liver substance, separated from one another in places by grey translucent bands of connective tissue.

From the body of a child, aged nine. The case was characterised by great ascites.

Presented by Dr. E. G. TREVITHICK, Cheltenham.

Abscess.

549A. Part of a liver, the seat of one large and several smaller abscesses. The wall of the large abscess shows a well-marked "pyogenic membrane."

From the body of a boy, æt. 12, who was admitted for pain in the abdomen, which had lasted for about ten weeks, and which the day before admission was accompanied by an attack of convulsions. When examined, the right side of the chest was apparently distended with fluid, and the liver was pushed below the costal margin. The patient was very ill, his pulse was weak and rapid, his respirations frequent, and he persisted in lying on the right side. Thoracentesis was performed, and about 2 pints of serous fluid were removed, but the patient did not seem to be very greatly benefited. A week later, after consultation, it was decided to explore for a sub-phrenic abscess or hydatid of the liver, but nothing was found. The patient died two days later, or about twelve weeks from the onset of symptoms.

At the autopsy the liver was found to weigh 5¼ lbs. It contained numerous abscesses, particularly in the right lobe. Pus was also present in many of the bile-ducts at a distance from the abscesses, and filled the gall-bladder. The pus was not offensive in smell. The suppurative process involved the right supra-renal body, and had caused its entire disintegration. There was no abnormal pigmentation in the body. The intestines, and in particular the vermiform appendix, were quite healthy. *Vide* P.M. and Case Book, Vol. 11, No. 240.

Angeioma.

563A. A portion of liver substance, the seat of a cavernous angeioma. The growth is situated close to the surface, is

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dark red in colour, and spongy in appearance. It gave rise to no symptoms.

565A. Liver showing several hydatid cysts, in one of which the daughter cysts of the parasite are still present.

Presented by Dr. E. G. TREVITHICK, Cheltenham.

SERIES XXX.—DISEASES OF THE GALL-BLADDER AND BILE-DUCTS.

Carcinoma.

581A. A small portion of a liver with the gall-bladder; the latter is laid open, and shows a cavity much shrunken in its dimensions, and the walls of which are much thickened. The increased thickness is due to their infiltration by a malignant growth (a columnar cell carcinoma). In the recent condition the gall-bladder was filled with thick gritty material, but no definite calculus was present.

There is no record of this case.

SERIES XXXI.—DISEASES OF THE PANCREAS.

Diabetes.

582. The pancreas from a case of acute diabetes. The organ is much fibrosed, and atrophy of the secreting parenchyma has occurred to a considerable extent. The weight of the organ (2½ ounces) is less than half that of the normal.

From the body of a man, æt. 25, the history of whose disease only dated thirty-one days from the day of death; he died comatose. *Vide* P.M. and Case Book, Vol. 11, No. 309.

SERIES XXXII.—DISEASES OF THE LYMPHATIC GLANDS.

Tuberculosis.

586A. A tubercular axillary lymphatic gland laid open. A caseous mass replaces the normal glandular tissue.

The specimen is remarkable from its size and situation. Removed by operation from a young subject.

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SERIES XXXIII.—INJURIES AND DISEASES OF THE SPLEEN.

Hydatid Cyst.

606A. A spleen which is the seat of a large hydatid tumour, which has almost entirely replaced the normal structure of the organ. The true and false walls of the cysts are shown in the specimen, the interior being filled with numerous daughter cysts.

The specimen was removed from the body of a woman who died of transverse myelitis affecting the lower third of the dorsal region for a distance of about 1½ inches. The spleen weighed 53 ounces. There was no other evidence of hydatid disease. *Vide* P.M. and Case Book, Vol. 11, No. 37.

SERIES XXXIV.—DISEASES OF THE THYROID GLAND.

Adenoma.

607A. Section through part of a thyroid gland to show the presence of a tumour within its substance. The tumour, which is encapsulated, is histologically an "Adenoma."

From the body of a man, æt. 68, who died of angina pectoris. The thyroid condition gave rise to no symptoms. *Vide* P.M. and Case Book, Vol. 11, No. 254.

Goître.

608B. One half of a large cystic bronchocele. The cut surface shows innumerable cysts of varying sizes filled with brown colloid substance.

There is no record of this case.

SERIES XXXV.—DISEASES OF THE HEART AND PERICARDIUM.

Pericarditis.

614A. A heart, the seat of pericarditis. The visceral layer of the pericardium alone is shown, but the parietal layer was in all respects similar. The entire pericardium is covered by a thick fibrinous deposit, which shows the characteristic honeycombed and ribbed appearance, but which can easily be

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stripped off, leaving the true serous surface apparently unaltered beneath.

From the body of a woman, æt. 33. There was extensive fibrinous deposit in the left pleural cavity, and the lung beneath was solid. The kidneys were of normal weight and congested; capsules stripped easily. Microscopical examination showed advanced post-mortem decomposition of the tubules with disorganisation of the glomeruli, but there was no sufficient evidence to indicate that the pericarditis and pleurisy were of renal origin. The condition was not diagnosed during life, but the patient was highly dyspnœic on admission, and died on the third day. *Vide* P.M. and Case Book, Vol. 11, No. 209.

Fibroid Degeneration.

628. Chronic fibrosis of the left ventricle. The fibroid change involves the entire apex, and is almost confined thereto.

From the body of a man, æt. 70, who was dead when brought to the Hospital. *Vide* P.M. and Case Book, Vol. 11, No. 299.

SERIES XXXVI.—INJURIES AND DISEASES OF THE ARTERIES.

Thrombosis of Aorta.

669A. The transverse part of the aortic arch, and a portion of the descending aorta laid open to show the presence of a firm clot in the lumen of the vessel beyond the origin of the innominate left carotid and left subclavian arteries. The piece below has been cut transversely to show how completely the clot fills the lumen, and its intimate connection with the walls of the vessel. The clot reached down to the level of the diaphragm.

From the body of a man, æt. 49, who died of a large mixed cell sarcoma of the os innominatum. There was no evidence found at the autopsy of a collateral circulation; neither was there clotting in the vessels about the hip or pelvis. Microscopically the clot in the aorta is mostly fibrin, but there are a few large cells of sarcomatous appearance in places. There is no appearance of organisation, but much of degeneration. *Vide* P.M. and Case Book, Vol. 10, No. 290.

SERIES XXXVIII.—INJURIES AND DISEASES OF THE LUNGS AND PLEURÆ.

Pneumonia.

729B. A section of the upper lobe of a right lung which is the seat of pneumonia. The specimen shows hepatisation

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throughout the greater part, but some crepitant lung tissue exists at the apex and along the anterior border. The affected portion is in a condition of grey hepatisation.

From the body of a man, æt. 54, who died eleven days after the onset of influenza. *Vide* P.M. and Case Book, Vol. 11, No. 221.

730A. A left lung the lower lobe of which is in a stage of grey hepatisation. The lobe is completely solid, and the surface mottled grey on section.

The patient from the body of whom the specimen was obtained was a man, æt. 28. He died with double lobar pneumonia on the sixth day of the disease. *Vide* P.M. and Case Book, Vol. 11, No. 262.

Gangrene.

733A. Section through a right lung. A circular area of considerable size, and situated towards the extremity of the lower lobe, is the seat of gangrene. The affected part is dark in colour, soft, pultaceous, and sloughy. An area of grey hepatisation surrounds it. Externally over a considerable area the pleura and superficial lung tissue is in a sloughy condition.

From the body of a man, æt. 37. No history obtainable. *Vide* P.M. and Case Book, No. 301.

Tuberculosis.

740A. A section through part of a lung the seat of tuberculosis. Small yellowish-white deposits confluent in places are widely scattered over the cut surface, and are also visible beneath the pleura.

From the body of a girl, æt. 13. Eighteen months before admission the patient had influenza, and chorea seven weeks before admission. When admitted, a history was given of diarrhœa and somnolence, lasting one month, and epistaxis lasting three weeks. Rose-coloured spots were observed on the abdomen while in the hospital, the spleen was enlarged, and the abdomen distended; numerous moist sounds in the chest, especially at the bases. No B. tuberculosis were found in the sputum. At the autopsy generalised miliary tuberculosis was found. The intestines were apparently quite normal. *Vide* P.M. and Case Book, Vol. 11, No. 248.

740B. The section through a right lung the upper lobe of which is extensively excavated as the result of tuberculosis. A few small cavities are present in the middle lobe. The remainder of the lung tissue is the seat of numerous disseminated miliary tubercles. In the upper and middle lobes there is a large amount of dense fibrous tissue, especially about the root of the lung. The entire organ weighed 2lbs. 4ozs., or more than double the normal. The left lung was also the seat of tuberculosis, but was not so extensively diseased. *Vide* P.M. and Case Book, Vol. 11, No. 277.

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Sarcoma.

754B. Section through part of a lung the seat of secondary sarcomatous deposits. The deposits in all cases are the seat of hæmorrhages which have completely obscured their original appearance. The growths are secondary to a round celled sarcoma of the left testis. (No. 1024A.)

From the body of a man, æt. 29. *Vide* P.M. and Case Book, Vol. 11, No. 178.

SERIES XXXIX.—INJURIES AND DISEASES OF THE LARYNX, TRACHEA, AND BRONCHI.

Ulceration.

771A. The larynx of a child, which has been opened from behind. There is extensive ulceration, affecting the ary-epiglottic folds, and the true and false vocal cords. The cartilages are laid bare in places.

There was no cause found for the condition, neither did it give rise to symptoms. The child died from broncho-pneumonia. History of case incomplete.

Tubercular Ulceration.

744A. A larynx laid open from behind to show the effects of tubercular disease. The epiglottis is almost destroyed by ulceration, and the cavity of the larynx much infiltrated and ulcerated. The trachea is also affected to the extent of about 1 inch.

From the body of a woman, æt. 48, who died of advanced pulmonary tuberculosis. Laryngeal symptoms and dysphagia had lasted for about two and a half months when death occurred. *Vide* P.M. and Case Book, Vol. 11, No. 244.

Syphilitic Stenosis of Bronchi.

784A. Syphilitic stenosis of the main divisions of the left bronchus. The two upper branches are not much affected, but the lower ones are markedly stenosed, and show in several places bridles projecting into their lumen. There is a good deal of fibrous thickening around the tubes and on the outer side, which was connected with a mass of dense cicatricial tissue occupying the situation of the infra-tracheal lymphatic glands.

From the body of a man, æt. 44, who died of lardaceous disease. There was a distinct history of syphilis. The bronchial condition was unaccompanied by symptoms. Small gummata were present in the liver. *Vide* P.M. and Case Book, Vol 11, No. 313.

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SERIES XL.—DISEASES OF THE SUPRA-RENAL CAPSULES.

788A. The supra-renals from a case of Addison's disease. The organs are considerably enlarged, and are the seat of extensive caseous tuberculous changes. Quiescent tuberculosis at apices of both lungs. Great hyperplasia of lymphoid tissue in the entire alimentary tract. No disease of spinal column.

From the body of a man, æt. 20. *Vide* P.M. and Case Book, Vol. XI, No. 250.

SERIES XLI.—INJURIES AND DISEASES OF THE KIDNEYS.

Infarction.

790C. A left kidney which has been divided longitudinally to show the presence of infarcts, which chiefly affect the lower extremity.

There is no record of this case.

Hydronephrosis.

793A. The right kidney of a child, in an advanced degree of hydronephrosis. All true renal substance has disappeared, the organ consisting of a lobulated cystic mass. The upper extremity of the ureter was converted into a delicate cord, though lower down, and at its bladder termination it was well formed and pervious. The other kidney was normal.

From a child, æt. 11 days, who died from septic meningitis, originating in a spina bifida. The following additional abnormalities in development were noted: (1) A lumbar spina bifida, which had ruptured; (2) The urachus pervious in its anterior two-thirds; (3) A prolapsed uterus with protruding cervix, there being no evidence of a clitoris. *Vide* P.M. and Case Book, Vol. 11, No. 216.

Tubal Nephritis.

799A. Specimen of a large white kidney from a child. The organ is large, the cortex swollen and anæmic; the capsule is thinned and strips readily. Microscopically, the specimen is an example of typical tubal nephritis and congestion about the pyramids: the glomeruli are normal in appearance.

From the body of a boy, æt. 5, who presented a peculiar clinical history. He was at school until 5 months before death, and the first symptom was

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"puffiness" of the eyelids. During this time, periods of general œdema alternated with periods of, apparently, perfect health. There was no history of scarlatina or other zymotic disease. On admission there were general anasarca, especially marked about the face, considerable ascites, and bronchitis. The urine contained three-quarters albumin on boiling, was scanty, but contained no blood. 1·7 per cent. of urea was present. There was no neuro-retinitis. There was great variation in the amount of urine passed (from 9 to 90 ounces) in the twenty-four hours during the patient's stay in Hospital, and the amount of urine varied inversely with the amount of general œdema. At intervals the urine was loaded with urates. More careful examination showed that the proteid in the urine chiefly consisted of serum-albumin, but that small quantities of serum-globulin and primary albumoses were also present. This was the case when the urine was scanty and the amount of albumin present (and the subcutaneous œdema) were considerable. When the urine was plentiful and contained a small trace of proteid, serum albumin was the only variety found. A curious point about the case was that the child almost always seemed to be in perfect health: even when general œdema was extreme he would sit up in bed and play intelligently with his toys. Towards the end a small abscess formed over the sacrum. During the last week of life, the patient's condition deteriorated rapidly and he became very weak and semi-comatose. The temperature was of a very irregular type. The kidneys together weighed 9 ounces. Ocular changes were found at the autopsy. *Vide* P.M. and Case Book, Vol. 11, No. 286.

Cystic Disease.

813B. One-half of a kidney which is congenitally cystic. Very little trace of renal substance remains, its place being occupied by the cysts.

The specimen is from a man, æt. 46, who died of malignant disease of the pancreas. The renal condition was not diagnosed during life. *Vide* P.M. and Case Book, Vol. 11, No. 207.

Lipoma.

814B. A small portion of a kidney mounted to show the existence of a fatty tumour within its substance.

The tumour was found accidentally in the body of a woman, æt. 30, who died of suppurative meningitis. At the autopsy it was thought to be a focus of pyæmic infection. Microscopically the growth is not encapsuled, and consists of a very loose areolar tissue in which are large and small fat globules. *British Medical Journal*, 1900, Vol. 2. P.M. and Case Book, Vol. 11, No. 222.

Inclusion of Supra-renal Body.

816A. A left kidney showing the supra-renal body wholly embedded in the upper part of its substance. The kidney shows persistent fœtal lobulation, and is fibrotic. The supra-renal body is partially cystic, and hæmorrhage has occurred into its substance. *Vide* P.M. and Case Book, Vol. 11, No. 238.

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SERIES XLVII.—DISEASES OF THE TESTICLE.

1018A. A testicle the seat of fibro-cystic disease. The normal structure is replaced by fibrous tissue containing numerous cysts within its meshes. Microscopically the growth is a cystic fibro-myxo-sarcoma.

Removed by operation from a man, æt. 26. Clin. Lab. Rep., Vol. 1, No. 19.

SERIES XLVIII.—DISEASES OF THE OVARIES.

Multilocular Cystomata.

1034A. Portion of a multilocular ovarian cyst with mucoid contents.

History unknown.

Dermoid Cysts.

1039A. A specimen showing a dermoid cyst connected with the right ovary, and situated between the layers of the right broad ligament. A vertical section has been made through the cyst to expose the contents. These consist of fatty sebaceous matter and hair. Part of the right ovary can be seen merged in the cyst wall.

The specimen was removed from the body of a woman, æt. 64, who died of cirrhosis of the liver. The dermoid cyst caused no symptoms during life. *Vide* P.M. and Case Book, Vol. 11, No. 253.

SERIES XLIX.—DISEASES OF THE FALLOPIAN TUBES.

Pyosalpinx.

1049A. A pyosalpinx which has been divided transversely and longitudinally to show its contents. In the recent condition the pus in the dilated Fallopian tube was fluid, but as the result of the Kaiserling method it has become solid and has shrunken, at the same time dragging the wall of the sac along with it. The specimen was removed by operation.

No further history obtainable.

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Cyst.

1054A. A small cyst in connection with the ovarian fimbriæ. It has a long slender pedicle and the interior has been everted to show the presence of a warty calcareous growth. The cyst has probably originated in one of Kobelt's tubes. It was removed along with a multilocular ovarian cyst.

SERIES LII.—INJURIES AND DISEASES INCIDENTAL TO GESTATION AND PARTURITION.

Abortion.

1090A. A uterus and appendages from a case of recent abortion occurring about the 3rd month. The peritoneum covering the fundus, and posterior surface, is covered with yellow fibrin. Both ovaries and Fallopian tubes show signs of inflammation. The interior of the uterus is coated with blood-clot, but there is no evidence of sepsis.

From the body of a woman, æt. 31, who was admitted with general peritonitis accompanied by abortion. At the autopsy it was found that the cause of the peritonitis was gangrenous appendicitis, and not the abortion as at first supposed. See Nos. 498 and 436B. *Vide* P.M. and Case Book, Vol. 11, No. 239.

SERIES LIII.—DISEASES OF THE BREAST.

Sarcoma.

1111A. Part of a breast the seat of a sarcomatous growth. The growth is yellowish in colour, well defined in its extent, and small extravasations of blood have occurred into its substance.

There is no record of the case.

Cancerous Ulcer.

1129A. Part of a breast with the overlying skin and the nipple. A little to the outside of the latter the skin has been destroyed over a large circular area, and a red nodular ulcerated mass has taken its place. The growth is a carcinoma, which is microscopically akin to squamous cell carcinoma, but which presents certain histological differences therefrom, and certain resemblances to rodent cancer.

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Removed by operation from a woman, æt. 58. The growth commenced in a mole-like structure—a so-called supernumerary nipple—eighteen months before removal. The axillary glands were enlarged as the result of septic inflammatory changes, but were not infiltrated by carcinoma.

Presented by Mr. W. G. SPENCER.

SERIES LIV.—INJURIES AND DISEASES OF THE CENTRAL NERVOUS SYSTEM.

Laceration of Cerebellar Peduncles.

1133B.—The medulla, pons, and a small portion of the left cerebellar hemisphere. The middle and lower cerebellar peduncles on the left side have been torn through and there is some effusion of blood in the neighbourhood.

From the body of a man who was brought in dead as the result of a severe accident. At the autopsy numerous injuries were found, including complete laceration of the aorta and inferior vena cava. There was, however, no fracture of bone above the level of the tenth dorsal vertebra, and in particular there were no fractures or dislocations of the skull or cervical vertebræ. There was some effusion of blood in the neighbourhood of the cerebellar injury, but otherwise the brain was uninjured. *Vide* P.M. and Case Book, Vol. 11, No. 271.

Hæmorrhage into Pons.

1141A. The cerebellar hemispheres, pons varolii, and adjacent structures of a man who died of cerebral hæmorrhage. The 3rd and 4th ventricles have been opened above, and the cerebellar hemispheres separated. The ventricles and the iter are filled with blood-clot. The right corpus quadrigeminum has been broken up in some degree by the hæmorrhage, which is mainly in the pons, and which did not rupture superficially.

Clinical notes of the case are wanting, but the patient was a man æt. 42, and microscopical examination of the kidneys showed a well-marked fibrosis. He died the day after admission. P.M. and Case Book, Vol. 11, No. 218.

Sub-arachnoid Hæmorrhage.

1143A. A brain the seat of extensive sub-arachnoid hæmorrhage. The blood extravasation chiefly affects the base, but has also occurred to a considerable extent over the cortex and in the great fissures. Part of the right hemisphere, which has been removed, shows no evidence of central hæmorrhage. The condition is probably the result of embolism of some large vessel, but the vessel itself was not found.

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From the body of a man, æt. 25, who was three months in Hospital with double aortic disease. The temperature was somewhat irregular in spite of a steady general improvement in health, but the night before death it rose suddenly to 101·6° and the man became delirious and showed some weakness of the left arm and leg. In the morning twitching was observed on the left side. He died somewhat suddenly. At the autopsy the heart was found to weigh 18 ounces. The aortic cusps were the seat of large colourless vegetations with ulceration. The other valves were normal. *Vide* P.M. and Case Book, Vol. 11, No. 242.

Tubercular Meningitis.

1151A. A brain the base of which is affected with tubercular meningitis. A good deal of thick yellow fibrin is present at the base of the brain and passing along both Sylvian fissures, and tubercles can readily be detected over the same area. The lateral ventricles are somewhat dilated, but do not show any signs of the tubercular process having invaded their cavities. The convolutions were flattened, but little or no fibrin was present over the convexity. The ventricles contained a considerable excess of a fairly clear colourless fluid.

From the body of a female child, æt. 16 months, who died with generalised miliary tuberculosis, starting from broken-down tuberculous glands at the roots of the lungs. *Vide* P.M. and Case Book, Vol. 11, No. 223.

Abscess and Suppurative Meningitis.

1153A. The lower half of a brain. The meninges covering the medulla and pons and the postero-inferior surface of the cerebellum are infiltrated with pus. An abscess occupies a large part of the interior of the left tempero-sphenoidal lobe, and communicates with the posterior and descending horns of the lateral ventricle.

From the body of a boy, æt. 17, who was admitted for severe headache and deafness. At the autopsy, besides the condition of the brain shown in the specimen, the spinal meninges were tightly distended with pus down to the cauda equina. There was extensive necrosis of the petrous portion of the left temporal bone, the result of otitis media. *Vide* P.M. and Case Book, Vol. 11, No. 298.

1153B. Part of the brain of a child, æt. 2 months, the cortical portion of which has been removed to expose the lateral ventricles. The latter were in the recent state filled with turbid fluid and thick pus. This condition was associated with, and perhaps was secondary to, a superficial cerebellar abscess, the site of which can be detected on the hinder part of the left cerebellar hemisphere, where the brain-substance is disintegrated. The abscess cavity situated beneath this part

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of the cerebellum communicated with the lateral ventricles. No cause for the suppuration was discovered on careful examination, and the bone beneath the focus of suppuration in the cerebellum was quite healthy. The ependyma of the lateral ventricles is considerably thickened. Microscopically the pus contained large numbers of cells with oxyphil (eosinophil) granules and numerous cocci in pairs (? diplococci or short chains of streptococci). Cultivations were not made from the pus.

On admission the infant was semi-comatose and had a hectic temperature. Its blood gave a very good "Widal's" reaction. Later, it cried almost incessantly (but there was no "hydrocephalic cry"), a squint, and rigidity of the neck developed, and it passed into a condition of complete coma. With regard to the presence of the Widal's reaction, it is noteworthy that though enteric fever had been epidemic in the neighbourhood of the child's home, a history pointing to this disease in the mother was quite wanting. The intestinal tract of the infant was found at the autopsy to be perfectly normal. *Vide* P.M. and Case Book, Vol. 11, No. 234.

Chronic Hydrocephalus.

1155A. Section through the head of a child, the subject of chronic hydrocephalus. The bones of the skull are thin, the lateral ventricle widely distended, and there is some flattening of the structures at the base of the brain. The cerebral substance forms a thin boundary at the vault to the dilated ventricle. The internal wall of the ventricle has been removed to show the extent of the cavity more clearly.

Tumour of Brain.

1164A. A transverse vertical section through a portion of the cerebral hemispheres. An oval growth depresses and partially replaces a portion of the cortex and underlying white matter of the right cerebral hemisphere. The growth is soft in consistence, and occupies an area at the top of the ascending parietal and ascending frontal convolutions near the fissure of Rolando. Its pressure has caused some obliquity of the callosal commissure. The growth was firm in consistence. Numerous attempts were made (at a later date) to determine the histological characters, but without success; it appeared, however, to be highly cellular.

From the body of a woman, æt. 32. Symptoms began four months before death, with stiffness of the index and middle fingers of the left hand, which was followed in 10 days by complete paralysis of the arm. Other symptoms (spasmodic movements and paralysis) subsequently affected the left side of the face and the left leg, but were recovered from on three separate occasions. There were inequality of the pupils, paralysis of both 6th nerves, and acute double optic neuritis. Knee-jerks absent on both

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sides; slight left ankle clonus, and diminished left plantar reflex. Vomiting persistent. Potassium iodide was given in large doses, but the patient gradually sank. *Vide* P.M. and Case Book, Vol. 11, No. 136.

Tumours of Choroid Plexuses (Psammoma).

1168A. Portions of the choroid plexuses of the lateral ventricles, each of which contains a small tumour. The tumours are soft and white. One of them has been laid open and shows that the interior is partially cystic, and probably papillomatous. The denser white portion was gritty on section.

From the body of a man, æt. 56, who was dead when brought to the hospital. The coronary arteries were almost occluded by atheroma with calcification, and the heart was fatty. The brain was shrunken, the Pacchionian bodies more marked than usual, and the basilar artery was highly atheromatous. *Vide* P.M. and Case Book, Vol. 11, No. 315.

SERIES LVIII.—DISEASES OF THE SKIN AND SUBCUTANEOUS TISSUE.

Molluscum Fibrosum.

1234. A pedunculated fibrocellular tumour, the size of a walnut, removed from the thigh. It is a specimen of the discrete form of "Molluscum Fibrosum."

No further history.

Cystic Lipo-sarcoma.

1237A. A fibro-cystic lipo-sarcoma removed from the region of the elbow. The skin covering the growth is discoloured but not dimpled. The cut surface shows general fibrosis with cysts of various sizes. Hæmorrhage has occurred into the largest of these.

The tumour formed a spherical mass about 1½-in. in diameter over the olecranon of a new-born baby. It became inflamed, and was removed by an oval incision with the superficial skin. Healing followed, but the later history of the infant is unknown.

SERIES LIX.—GANGRENE.

1261A. The fore-part of a left foot. The 2nd toe in its entirety is the seat of gangrene. The affected part is black and shrivelled. The line of demarcation is situated at the root of the toe. The gangrenous process also affects the adjoining portions of the great and 3rd toes.

The history of the case is unknown.

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SERIES LX.—MALFORMATIONS AND DEFORMITIES.

1272A. The skull of an infant the subject of a congenital cephalhydrocele. The tabular portions of the occipital bone are widely separated from the lambdoid suture to the posterior margin of the foramen magnum, and the gap thus produced was occupied by the protrusion. The bones of the skull have been macerated and subsequently wired together. The separated edges of the occipital bone are rounded off and much thickened. There was no evidence of an anterior fontanelle, and the fibrous tissue over the whole of the skull was exceptionally dense and present in exceptionally large amount.

From the Maternity department.

Abnormality of Rib.

1284A. A right third rib which is widened and bifurcated at its external end. In the recent condition the costal cartilage was single at its attachment to the sternum, but bifurcated a short distance externally where it joined the terminations of the rib. The junction of these elements thus formed an oval opening.

From the body of a boy æt. 15. *Vide* P.M. and Case Book, Vol. 11, No. 314.

SERIES LXI.—PARASITES.

Cestoda.

1326A. Head and small portion of tænia medio-canellata.

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THE CLUBS' UNION.

This year a radical change has been made in the constitution of the Sports' Clubs of this Hospital. For the first time in their history, they have been placed on a sound financial basis. Previously all the clubs were supported by subscriptions from their members, and also by annual subscriptions from the various members of the staff. It had long been felt that every student on entering the school ought to become a member of the Clubs' Union, but there was no means of enforcing this, with the result that some did not join at all during their course. The clubs also were only loosely connected together, the Guthrie Society, Refreshment Bar, and Students' Club being entirely separate institutions.

At the commencement of the present year, a scheme was sanctioned by the School of Medicine Committee whereby all the existing institutions were united under the title of the Westminster Hospital Clubs' Union, controlled by a central finance and governing committee, though each individual club has its own separate committee for managing its affairs.

The School of Medicine Committee very generously allowed a grant of six guineas to the Clubs' Union for each student who joined the Hospital for the entire curriculum (a proportionate sum being allowed for other students), this sum being in lieu of all subscriptions from staff and students.

It is to Mr. Tubby that the thanks of the students are almost entirely due for these changes, for it has only been through his unflagging energy and perseverance that the scheme was drawn up, perfected, and eventually sanctioned by the School of Medicine Committee.

Though the financial advance has been so great, the year has not as good a record as usual on the athletic side. This is largely due to the fact that a number of our most active members went out to South Africa early in the year, thus rendering the raising of regular teams difficult.

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The Rugby Football Club has been fairly successful, winning, amongst others, the annual match against the Brighton Football Club at Brighton. In the cup tie we beat Charing Cross Hospital in the first round by a considerable margin of points, but succumbed to the London Hospital in the second round.

The Association Football Club has played a fair number of matches, though they did not this year enter the Cup competition.

In the Swimming Inter-Hospital Races, we reached the second round, being then beaten by St. Mary's Hospital, who eventually won the Cup.

There have been scarcely any cricket matches played this year. It is in this department more than any other that the great need for a ground is felt. Although the Clubs' Union is an accomplished fact, one more thing is needful to make it what it ought to be: it is, that the School should possess a ground of its own, as without one all the Sports' Clubs are greatly handicapped.

WM. PAYNE.

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WESTMINSTER HOSPITAL AND SCHOOL.

THIS hospital owes its origin to a meeting which was held at St. Dunstan's Coffee House, on the 14th January, 1715, and first opened its doors at a small house in Birdcage Walk, under the name of the "Publick Infirmary for the Sick and Needy." At this time the only Hospitals which existed for the medical and surgical relief of the sick poor were St. Bartholomew's and St. Thomas's, which were both established and carried on by the religious houses of their respective neighbourhoods, and created Royal Hospitals soon after the suppression of the monasteries in 1537.

Westminster Hospital is remarkable as being the first in London which was founded by the voluntary contributions of the public. Guy's Hospital, founded by one individual, was not established until a few years later. After nearly five years' work in Birdcage Walk, the infirmary was converted into a hospital, situate in Petty France, and having accommodation for 30 In-patients. So rapidly did its usefulness develop, that in 1724, having been in existence for little more than nine years, it opened its wards in Chapel Street with sixty beds. At this time, Cheselden, the teacher of John Hunter, became one of its Surgeons; a post which he held for fifteen years. Another nine years passed, and in 1733 the Hospital was removed to a still larger building in James Street, where it remained for 101 years. This removal, however, did not take place without a strong protest on the part of a large body of the Governors, who preferred a house near Hyde Park Corner, called Lanesborough House, to which they finally seceded with a portion of the staff, and established the present St. George's Hospital.

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In 1834 the patients were removed into the present building, and a Medical School was established in Westminster in the same year; but it was not until 1849 that the School became connected with the Hospital.

Alterations and improvements, including a Chapel, an extensive Out-patient Department, and a Clinical Laboratory, have largely added to the resources and efficiency of the Hospital, which at present contains upwards of 200 beds, including accommodation for special classes of disease. The old Chapel has been converted into a Ward for Children.

There are separate departments for diseases of the Eye, of the Ear, of the Skin, of the Teeth, of the Throat and Nose, for those peculiar to Women, and for Orthopædic practice.

In 1884 a site containing 5,900 square feet was purchased in Caxton Street, close to the Westminster Town Hall, and in October of the same year the Governors of the Hospital accepted a contract for £8,168 for the erection of School Buildings, from plans drawn up by Mr. Stephen Salter, F.R.I.B.A. The foundation-stone was laid by His Grace the Duke of Westminster on February 28th, 1885, and the building was opened on October 1st in the same year.

The Dean will be pleased to give aid to parents and guardians in the selection of places of residence for students.

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HOSPITAL STAFF.

Consulting Medical Staff.

DR. H. B. DONKIN.

Consulting Surgical Staff.

MR. C. HOLTHOUSE. MR. RICHARD DAVY. MR. G. COWELL.
MR. N. C. MACNAMARA. MR. T. BOND.

Consulting Dental Surgeon—DR. J. WALKER.

Medical In-patient Staff.

DR. W. H. ALLCHIN. DR. DE HAVILLAND HALL. DR. W. MURRELL.

Obstetric Physician—DR. W. RIVERS POLLOCK.

Surgical In-patient Staff.

MR. C. STONHAM. MR. W. G. SPENCER. MR. A. H. TUBBY.

Medical Out-patient Staff.

DR. R. G. HEBB. DR. W. A. WILLS. DR. A. M. GOSSAGE.
DR. PURVES STEWART.

Physician for Diseases of the Skin—DR. T. COLCOTT FOX.

Assistant Obstetric Physician—DR. G. DRUMMOND ROBINSON.

Surgical Out-patient Staff.

MR. P. R. W. DE SANTI. MR. W. TURNER. MR. E. P. PATON.

Surgeon in Charge of Throat Department—MR. W. G. SPENCER.

Ophthalmic Surgeon—MR. G. HARTRIDGE.

Surgeon in Charge of the Orthopædic Department—MR. A. H. TUBBY.

Surgeon in charge of the Ear Department—MR. P. R. W. DE SANTI.

Dental Surgeons—MR. C. W. GLASSINGTON. MR. E. GARDNER.

Administrators of Anæthetics—DR. N. W. BOURNS. MR. A. MACLEOD.

Pathologist and Curator of Museum—DR. W. S. LAZARUS-BARLOW.

Medical Registrar—DR. BARRON.

Surgical Registrar—MR. E. CANNY RYALL.

Assistant Curator of Museum—MR. G. B. JAMES.

Secretary—MR. S. M. QUENNELL.

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LECTURERS.

Clinical Medicine—DR. ALLCHIN, DR. HALL, DR. MURRELL.
Clinical Surgery—MR. STONHAM, MR. SPENCER, MR. TUBBY.
Clinical Gynæcology—DR. W. RIVERS POLLOCK.
Medicine—DR. DE HAVILLAND HALL and DR. MURRELL.
Diseases of the Skin—DR. COLCOTT FOX.
Neurology and Insanity—DR. CHARLES MERCIER.
Elementary Practical Medicine.—DR. WILLS.
Surgery—MR. STONHAM.
Ophthalmic Surgery—MR. HARTRIDGE.
Surgery of the Throat and Nose—MR. SPENCER.
Orthopædic Surgery—MR. TUBBY.
Aural Surgery—MR. DE SANTI.
Dental Surgery—MR. GLASSINGTON.
Anæsthetics—DR. BOURNS.
Operative Surgery—MR. STONHAM.
Surgical Anatomy—MR. TUBBY.
Minor Surgery—MR. DE SANTI.
Surgical Pathology—MR. PATON.
Midwifery and Diseases of Women—DR. W. RIVERS POLLOCK.
General Pathology and Morbid Anatomy—DR. LAZARUS-BARLOW.
Post-Mortem Demonstrations—DR. LAZARUS-BARLOW.
Materia Medica, Therapeutics, & Pharmacology—DR. PURVES STEWART.
Demonstrator of Practical Pharmacy—MR. A. E. TANNER.
Forensic Medicine—DR. HEBB and DR. G. DRUMMOND ROBINSON.
Toxicology.—DR. H. WILSON HAKE.
Public Health—DR. S. MONCKTON COPEMAN.
Bacteriology—DR. BLAXALL.
Anatomy—MR. BLACK.
Demonstrators of Practical Anatomy—MR. BLACK, MR. TURNER. and MR. PATON.
Physiology—DR. GOSSAGE.
Practical Physiology—DR. GOSSAGE.
Demonstrator of Physiology—MR. CANNY RYALL.
Histology—DR. GOSSAGE.
Biology and Comparative Anatomy—DR. DONELAN.
Emeritus Lecturer on Chemistry—DR. DUPRÉ, F.R.S.
Chemistry and Practical Chemistry—DR. H. WILSON HAKE.
Physics—MR. H. SOMERVILLE.

Treasurer of the School—DR. W. RIVERS POLLOCK.
Dean of the School—MR. TUBBY.
Sub-Dean—DR. GOSSAGE.
Secretary and Librarian—MR. W. FRYER.

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FEES FOR GENERAL STUDENTS.

A.—The Composition Fees for the entire course of Hospital Practice and Lectures required for the Membership of the Royal College of Surgeons of England, and for the Licenses of the Royal College of Physicians, and of the Society of Apothecaries of London, may be paid in one of three ways.

1. In *one* payment on Entrance, 110 Guineas.

2. In *two* payments of 60 Guineas each, on Entrance and at the Commencement of the Second Winter Session respectively.

3. In *six* payments, at the Commencement of each of the first Six Sessions, 25 Guineas each Winter Session and 20 Guineas each Summer Session.

These fees include the Subscription for Membership of the Clubs' Union for five years.

B.—Members of Universities and others, who have completed one year of Medical Study at a University or other Medical School, and desire to enter for the Hospital Practice and Lectures required by the Universities, or by the Colleges of Physicians and Surgeons, may pay their Fees in one of three ways, viz. :—

1. In *one* payment of 80 Guineas on Entrance.

2. In *two* payments of 45 Guineas each, at the Commencement of the First and Second Sessions of attendance.

3. In *three* payments of 33 Guineas each, at the Commencement of the First, Second, and Third Sessions respectively.

These fees include Membership of the Clubs' Union for four years.

C.—Students who have passed their *first* M.B. Examination, or who have completed their Anatomical and Physiological studies, and desire to enter for the full period of Hospital Practice and the Lectures on the practical subjects only, may pay their Fees in one of two ways, viz. :—

1. In *one* payment of 55 Guineas, on Entrance.

2. In *two* payments of 33 Guineas each, at the Commencement of their First and Second Sessions.

These fees include Membership of the Clubs' Union for three years.

The Fees entitle the Student to an Out-Patients and In-Patient Dressership and Clerkship in rotation, and to the use of the Library.

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CLINICAL AND POST GRADUATE INSTRUCTION FOR QUALIFIED PRACTITIONERS.

A.—Qualified men *not requiring a Certificate for Examination purposes* will be admitted to the practice of the Hospital on production of the Joint Ticket issued by this School in conjunction with those of Charing Cross, Guy's, King's College, Middlesex, St. George's, St. Mary's, St. Thomas's and University College.

Fee for 3 months ... ... 7 guineas.
„ 6 „ ... ... 10 „

For Cards and particulars, application should be made to the Secretary, Metropolitan Medical Schools' Office, West Wing, Examination Hall, Victoria Embankment, London, W.C.

B.—British, Colonial, and Foreign qualified Practitioners *requiring a Certificate of Attendance for Examination purposes*, may be admitted to the Hospital Practice and Lectures, on payment of a fee of 12 Guineas. Special arrangements are made for Membership of the Clubs' Union.

The fees of the Conjoint Board for the admission of such Candidates to their Examinations are as under:—

(*a*)—If the Candidate's qualification be other than a University degree, the second as well as the Final Examination must be passed; the fee for the Second Examination being 10 guineas, and that for the Final 20 guineas. These Examinations may be taken without any interval between them.

(*b*)—If the Candidate's qualification be a University degree, the Second Examination is not required to be passed; and the fee for admission to the Final is 20 guineas to a graduate of a recognised Indian, Colonial or Foreign University, and 5 guineas to a graduate of an English, Scotch or Irish University. The Final Examination may be taken two years after the Candidate has passed an examination of his University in the subjects of the Second Examination of the Board.

(*c*)—After the Final Examination has been passed, the following fees must be paid before the Licence of the Royal College of Physicians and the Diploma of the Royal College of Surgeons can be obtained:—

(α) Candidate not holding a University qualification ... 10 guineas.

(β) Candidate whose qualification is that of a recognised Colonial, Indian, or Foreign University ... ... 20 „

(γ) Candidate whose qualification is that of an English, Scotch or Irish University ... ... 35 „

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FEES FOR SPECIAL CLASSES
IN SUBJECTS OF THE
UNIVERSITY OF LONDON EXAMINATIONS
AND OF THE
FIRST F.R.C.S. EXAMINATION.

A.—*Preliminary Scientific (M.B.) Examination.*			
Practical Chemistry	£3	3	0
Physics	3	3	0
Biology	6	6	0
B.—*Intermediate M.B Examination.*			
Physiology and Histology	4	4	0
Organic Chemistry	3	3	0
Compounding and Dispensing of Medicines	2	2	0
C.—*First F.R.C.S. Examination.*			
Comparative Anatomy	2	2	0
Physiology and Histology	4	4	0
D.—*Final M.B. Examination.*			
Practical Toxicology	2	2	0

These Classes are open to Students other than those of the School on conditions to be ascertained from the Dean.

Notice as to the times of holding them will be posted at the School at the commencement of each Session.

FEES FOR DENTAL STUDENTS.

The Fees for the *general* Surgical Practice and Lectures required for the Dental Diploma of the Royal College of Surgeons may be paid in one of two ways, viz. :—

1. In *one* payment on Entrance, 50 guineas.

2. In *two* payments of £27 10*s.* each, to be made at the Commencement of each Academical year.

A Scholarship of the value of £20 is offered annually for competition to commencing Dental Students.

These payments include the Library fee, and Membership of the Clubs' Union for two years.

The Lectures at the School are so arranged as to suit the convenience of Dental Students taking part of their course at the Dental Hospitals.

Students who become general Dental Students, as above, may enter for the special practice and lectures at the Dental Hospital of London, in Leicester Square, within easy reach of the hospital, or at the National Dental Hospital, Great Portland Street, for the study of Practical Dentistry. Lectures are delivered on Metallurgy, Dental Mechanics, Dental Surgery and Pathology, and Dental Anatomy and Physiology. The courses required for the Dental License of the College of Surgeons are one course of Metallurgy, and two of each of the other three; the fee for which, including Dental Practice, is Thirty Guineas at the former Hospital, and Twenty-four Guineas at the latter.

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SCHOLARSHIPS.

I.—WINTER SESSION.

The following Scholarships will be offered for competition to gentlemen about to enter in the Winter Session :—

(*a*) ARTS SCHOLARSHIPS.

Entrance Scholarship—the "Guthrie"	value,	£60
Entrance Scholarship	„	£40
Entrance Scholarship	„	£30
Dental Scholarship	„	£20
Free Presentation, to be competed for by Pupils of the Epsom Medical College	„	110 guineas.

(*b*) SCIENCE SCHOLARSHIPS.

Natural Science Scholarship	value,	£60
Chemistry and Physics Scholarship	„	£40
Oxford and Cambridge Scholarship	„	£40
Oxford and Cambridge Scholarship	„	£30

II.—SUMMER SESSION.

The following Scholarships will similarly be offered for competition to gentlemen about to enter in the Summer Session :—

(*c*) ARTS SCHOLARSHIPS.

Entrance Scholarship	value,	£50
Entrance Scholarship	„	£50

(*d*) SCIENCE SCHOLARSHIPS.

Natural Science Scholarship	value,	£60
The Governors' Scholarship (for Chemistry and Physics)	„	£40
Oxford and Cambridge Scholarship	„	£40
Oxford and Cambridge Scholarship	„	£30

III.—SUBJECTS OF THE SCHOLARSHIP EXAMINATIONS.

The subjects of the examinations for the Arts Scholarships are :—

LATIN.—As for the last Matriculation Examination of the University of London.

GREEK, FRENCH, OR GERMAN.—Passages for translation into English and questions in Grammar.

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MATHEMATICS.—*Arithmetic*, including vulgar and decimal fractions and extraction of square root; *Algebra*, including algebraical fractions, simple and quadratic equations, and arithmetical and geometrical progressions; and *Geometry*, including first four books of Euclid and easy deductions.

EXPERIMENTAL PHYSICS AND CHEMISTRY.—Questions in the former of an elementary character, and in latter confined to non-metallic elements.

The subjects for the Natural Science Scholarship Examination are:—Inorganic Chemistry, Experimental Physics, and General Biology (Zoology and Botany), as for the Preliminary Scientific Examination of the University of London.

The subjects of the examination for the Chemistry and Physics Scholarship are:—Chemistry (Inorganic and Organic) and Experimental Physics, as for the examination of the Conjoint Examining Board.

The subjects of the examination for the Oxford and Cambridge Scholarship are:—Anatomy and Physiology (including Histology).

IV.—DATES OF SCHOLARSHIP EXAMINATIONS.

Winter Session ...	...	...	September 25th and 26th.
Summer Session...	...	...	April 23rd and 24th.

V.—RULES.

1. The fee for the curriculum will be reduced in the case of each successful candidate by the amount of the value of the Scholarship awarded to him.

2. The successful candidate for the Oxford and Cambridge Scholarship will be required to become a Full Student of the School from the beginning of his second or third year. All other successful candidates will be required to enter for the Full Curriculum as First Year's Students. Students entering in May cannot compete for Scholarships in October.

3. Candidates must be under twenty-five years of age.

4. No Scholarship will be awarded unless sufficient merit be shown in the examinations.

5. The examinations are by written papers, and commence at 10 a.m.

6. A week's notice of intention to compete should be given, and a Certificate of moral character forwarded to the Dean; and each candidate for an Arts Scholarship should send notice as to the *Second* language in which he wishes to be examined.

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PRIZES.

I.—**The Treasurers' Prize,** an Exhibition, of the value of Ten Guineas, for general proficiency in Anatomy, Biology, and Chemistry, given by the Treasurers of the Hospital and the Treasurer of the Medical School, for competition amongst First Year's men.

The Examination will be held both at Christmas and at the end of the Winter Session.

II.—**The Sturges Prize in Clinical Medicine.**—The proceeds of the residue of the sum subscribed in memory of the late Dr. Sturges will be added to the sum of Five Pounds.

Candidates will be required to send in written reports on Six Cases selected by the Physicians from among the patients under their care. The Cases shall be selected as opportunity arises from immediately after Easter, and the Reports must be sent in by the 30th June. There will also be an Oral Examination.

III.—**The Clinical Surgery Prize,** value Five Pounds.

Candidates must send in, *on or before* the 30th of March, written reports with comments of not less than Six, and not more than Twelve, Surgical Cases, taken in the Wards of the Hospital during the preceding twelve months. The cases reported on must be those the Candidate has had allotted to him whilst acting as Clinical Clerk or Dresser. In May the Candidates must be prepared to write a Commentary on such case or cases as may be selected by the Physicians or Surgeons, and be examined also at the bedside, and in the Post-mortem Room.

Prizes II. and III., consisting of Books or Instruments, may be competed for after the completion of the Fourth Winter Session by Students who have entered for the full period of Hospital Practice.

IV.—**The Frederick Bird Medal and Prize,** of the value of Fourteen Pounds, will be offered for competition to Students after the completion of their Fourth Winter Session at the Westminster Hospital School of Medicine, provided they have been continuously engaged in study at the Hospital and School. The Examination will be by written papers, and *vivâ voce* (if the examiners so determine), in the following subjects:—Obstetric Medicine, including Midwifery and Diseases of Women and New-born Children, and one paper in Medicine and Pathology.

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V.—**The Chadwick Prize.**—In 1862 the late Mrs. Chadwick endowed the School with the interest of £700 Consols, in memory of her deceased husband, James Chadwick, Esq., a Governor of the Hospital. This Prize, of the value of Twenty Guineas in Books or Instruments, is offered for competition at the end of each Winter Session, and may be awarded to the most meritorious Student (or Students) of *any* year not exceeding the fifth, provided that such Student has been fully entered to the Lectures and Hospital Practice of this Hospital, that his attendance and general conduct have been in every respect satisfactory, and that, at the time of competing, no qualification has been obtained from any of the Licensing bodies. The Examination will be by written papers in Medicine and Surgery, including Pathology, applied Anatomy and Physiology.

Students who intend to compete for the Frederick Bird and Chadwick Prizes must send in their names to the Dean on or before March 1st.

VI.—**Class Prizes and Certificates.**—The Examinations in Anatomy, Physiology, Medicine and Surgery are held at the end of the Winter Session on the subjects of the General Lectures and those which are dealt with in the Special Lectures.

The Examinations in Pathology, Midwifery, Forensic Medicine, Pharmacology and Therapeutics, Histology, Biology, Practical Pharmacy, Practical Chemistry, and Physics, are held at the end of the Summer Session. A regular attendance as well as a satisfactory Standard of Merit in the Examination are the necessary qualifications.

Besides the above Prizes, all the Resident Medical Appointments are open to the Students without additional fee.

The Distribution of Prizes takes place annually during the Summer Session.

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HOSPITAL PRACTICE.

THE IN-PATIENTS are seen by the Physicians and Surgeons daily, when Clinical instruction is given in the Wards, and also by means of lectures and examinations upon the cases.

CLINICAL LECTURES are given weekly in the Clinical Lecture Room at the Hospital, before or after the visit, by the Physicians and Surgeons, according to the following table :—

DR. ALLCHIN, DR. HALL, DR. MURRELL } In rotation: On Wednesdays, during the Winter and Summer Sessions.
MR. STONHAM, on Mondays, in October, November, December.
MR. SPENCER, on Thursdays, in January, February, March.
MR. TUBBY, on Fridays, in May, June, July.
DR. POLLOCK, on Fridays, throughout the year.

A special notice is posted before each lecture.

THE OUT-PATIENTS are seen daily at 2 p.m. by the Assistant Physicians and the Assistant Surgeons. Students are required to attend in the Out-Patient Department before entering on duties in the Wards.

OBSTETRIC DEPARTMENT.—The Obstetric Physician, Dr. Pollock, attends on Tuesdays and Fridays, at 2 p.m., to see In-Patients affected with diseases peculiar to Women.

The Assistant Obstetric Physician, Dr. Robinson, sees the Out-Patients of this Department on Mondays and Fridays, at 2 p.m. Pupils, when properly qualified, attend cases of Lying-in patients under his superintendence.

OPHTHALMIC DEPARTMENT.—Patients suffering from Injuries and Diseases of the Eye are seen by Mr. Hartridge on Tuesdays and Fridays, at 9.30 a.m. Cases requiring operation are admitted into the beds especially allotted for this purpose.

SKIN DEPARTMENT.—Patients suffering from Diseases of the Skin are seen by Dr. Colcott Fox, on Wednesdays, at 2 o'clock.

AURAL DEPARTMENT.—Patients suffering from Deafness and Diseases of the Ear are seen by Mr. de Santi, on Tuesdays, at 2 p.m.

THROAT DEPARTMENT.—Patients suffering from Diseases of the Throat and Nose are seen by Mr. Spencer, on Mondays and Thursdays, at 2 p.m.

ORTHOPÆDIC DEPARTMENT.—Patients suffering from Deformities of the Spine and Limbs, are seen by Mr. Tubby on Fridays, at 3 p.m.

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DENTAL DEPARTMENT.—The Dental cases are seen by Mr. Glassington on Wednesdays and Saturdays at 9.15 a.m., and by Mr. Gardner on Tuesdays and Thursdays at 9.30 a.m.

POST-MORTEM EXAMINATIONS are performed by the Pathologist at 2 o'clock, as opportunities occur. Demonstrations of Morbid Anatomy are given on these occasions in accordance with the Regulations of the Conjoint Board, attendance upon which is now compulsory.

HOSPITAL APPOINTMENTS.

The following Officers of the Hospital are appointed by the House Committee, on the recommendation of the Physicians and Surgeons. In the event of the qualifications of the Candidates being equal, preference will be given to those gentleman who have been educated at the Westminster Hospital Medical School.

A MEDICAL AND A SURGICAL REGISTRAR, each with a Salary of Forty Pounds.—These Officers are appointed annually in March, but are eligible for re-election.

TWO HOUSE PHYSICIANS, TWO HOUSE SURGEONS, TWO ASSISTANT HOUSE SURGEONS AND A RESIDENT OBSTETRIC ASSISTANT.—These Officers are appointed for six months, and are provided with rooms and commons in the Hospital, except the Assistant House Surgeons who are provided with commons only. Candidates are required to produce certificates of having acted for four months each as Out and In-Patients' Clinical Clerk for the office of House Physician, and Out and In-Patients' Dresser for the office of House Surgeon, as well as a certificate of proficiency in the administration of Anæsthetics. The House Physician and Resident Obstetric Assistant will be selected after examination in Medicine and Midwifery respectively. For the office of House Surgeon there will be an examination in Surgery every three months. The selected Candidate will serve for six months as Assistant House Surgeon, at the end of which he will, if approved, be appointed House Surgeon for a further six months. The dates for the commencement of Office, are February 1st, May 1st, August 1st, and November 1st.

CLINICAL ASSISTANTS to the Assistant Physicians and Assistant Surgeons and ASSISTANTS to the Officers in charge of the Special Departments, may be appointed, on the approval of the House Committee of the Hospital, from amongst qualified Students, to assist in the work of the Departments.

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CLERKS AND DRESSERS AND MIDWIFERY ATTENDANTS.—These offices are open to all general Students of the Hospital, nominated by the School of Medicine Committee on the recommendation of the Dean, and appointed by the Hospital Board, *and no Student shall be considered as having attended the full period of Hospital Practice unless he have satisfactorily performed the duties of Clinical Clerk and Dresser.*

Every Student shall consecutively serve the offices of Out-Patients' Dresser and Clerk for a period of four months, and those of In-Patients' Dresser and Clinical Clerk for a period of four months, commencing January 1st, May 1st, and September 1st.

Two Pathological Clerks are appointed every four months, to assist in the Post-mortem Room, and to work under the direction of the Pathologist.

No Student is eligible for any of these appointments until he has passed the Second Examination of the Conjoint Board, or an equivalent Examination, and in no case shall a Student be permitted to hold two In-Patient offices at the same time.

Clerks and Dressers in the Special Departments of Hospital Practice are periodically appointed.

So far as vacancies permit, Students of other Hospitals are admitted to In-Patients' Dresserships or Clerkships. See Table of Fees.

The Wards are open to Students from 10 a.m. until noon and from 1.30 to 5 p.m. daily. The In-Patients' Clerks and Dressers are required to commence their duties at 10 a.m. and to sign their names and hour of arrival in a book kept in the Secretary's office. Students who have passed the Second Examination of the Conjoint Board, or its equivalent, are encouraged to accompany the House Physicians and House Surgeons in their morning visits.

MUSEUMS.

The Anatomical portion of the Museum contains dissected Preparations of all the principal tissues and organs of the Body, and a series of Models in Wax, which are used to illustrate the Anatomical and Physiological Lectures and the Student's reading.

The Pathological Museum is furnished with Specimens illustrating all the principal Morbid Conditions of the Body, and the Injuries to which it is liable. A collection of casts give the external appearances presented

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by the specimens prior to dissection. Constant additions are being made to this department by the selection of Pathological specimens from the Post-mortem Room. A descriptive catalogue of the Pathological Specimens prepared by Mr. C. Stonham, with additions by the Curator, can be obtained of the Secretary of the School, price five shillings.

Obstetric preparations and specimens of Comparative Anatomy are used to illustrate the lectures on those subjects.

The Materia Medica Museum contains a complete collection of the Drugs and Chemicals of the British Pharmacopœia in addition to many others, some of which are of considerable rarity. There is also a duplicate set of Drugs and Chemicals for the use of Students preparing for Examination, together with a large collection of Botanical Specimens.

LIBRARY.

The Library is open daily from 10 to 5 (Saturday 10 to 2) *for purposes of study*, and a Librarian is in attendance, to supply the Books for perusal.

It is under the management of a Committee, appointed by the School of Medicine Committee, consisting of the Dean and two Lecturers, and two Students who have completed not less than two years of study at the Westminster Hospital of Medicine, nominated by the Students.

The Entrance Fee of One Guinea is included in the general fees. Students who have entered for one or two Sessions may secure the same privileges by paying a fee of half-a-guinea.

THE CLUBS' UNION.

The Clubs' Union has now been formed, and consists of the Guthrie Society, and the Athletic, Football, Cricket, Swimming, and Students' Clubs.

The fees for Students are included in the Entrance Fees. The fees for past Students are half-a-guinea per annum; or a Composition Fee for Life Membership of two guineas.

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GUTHRIE SOCIETY.

Meetings of this Society for Debates, the reading and discussion of papers of Professional and General interest, the exhibition of Physiological and Pathological Specimens, &c., are held on the second Thursday of each month, at 8.30, in the Board Room at the Hospital.

At least two Clinical evenings are held each year.

Members have the use of the microscopes and specimens belonging to the Society.

The Opening Meeting for the Winter Sessions will be a Smoking Concert, held in the Medical School, in October, 1901.

RESTAURANT.

There is a restaurant attached to the School, which is open daily for the convenience of Students.

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PAST STUDENTS OF THE WESTMINSTER HOSPITAL.

LONDON.

ALDRICH, ARTHUR WORLEDGE, 9, Manor Road, Leyton, N.E.

ALLEN, DAVID JOHN, 15, Sheffield Terrace, Campden Hill, Kensington, W.

AMBROSE, A. P., 335, Clapham Road, S.W.

AMBROSE, G. P., 1, Abbeville Road, Clapham Park, S.W.

ATKINSON, JOHN LANCELOT, 112, Fernhead Road, Paddington, W.

AUSTEN, ALFRED WALTER, 30, Moreton Street, St. George's Square, S.W.

AYRES, CHARLES JAMES, 55A, Welbeck Street, Cavendish Square, W.

BARKER, ALFRED JAMES, 20, Beaulieu Villas, Finsbury Park, N.

BARNES, J. J. FREDERIC, 83, Caversham Road, N.W.

BARRON, HENRY T., 12, Crockerton Road, Upper Tootiug, S.W.

BATE, GEORGE PADDOCK, 2, King Edward's Road, Hackney, and 412, Bethnal Green Road.

BEADLES, ARTHUR, Park House, 35, Sunderland Road, Forest Hill, S.E.

BELL, WALTER WHITMARSH, 42, Helix Road, Brixton Hill, S.W.

BETTS, ALFRED JOHN VERNON, 83, The Chase, Clapham Common, S.W.

BETTS, LEONARD BOWRING, 83, The Chase, Clapham Common, S.W.

BOND, FRANK FOURACRE, Westminster Hospital.

BRACKENBURY, HENRY BRITTEN, 155, Stapleton Hall Road, Stroud Green, N.

BROOKES, ROBERT, Westminster Hospital.

BUDD-BUDD, EDWARD J., Eagle House, 73, South Side, Clapham Common, S.W.

CALDWELL, R. A., 21, Henrietta Street, Cavendish Square, W.

CATO, A. M., 199, Stanstead Road. Forest Hill, S.E.

CLARK, TOM, 1, Westbourne Street, Eaton Square, S.W.

CLAY, F. E., 15, Acre Lane, Brixton, S.W.

COLES, JOHN WM., 197 and 199, Camberwell New Road, S.E.

COOP, EDWARD JOHN ERNEST, 57. Darnley Road, West Kensington, W.

COPE, GILBERT EDGAR, 26, Bessborough Gardens, S.W.

CREIGHTON, E., Tankerville House, Greyhound Lane, Streatham Common, S.W.

CRONIN, EUGENE FRANCIS, Old Manor House, Clapham Common, S.W.

CULLINAN, E., 331, King Street, Hammersmith, W.

DAWSON, ERNEST R., 4, Grange Park Road, Leyton, N.E.

DAVIDSON, FREDK. MONTGOMERIE DAVONPORT, 4, Streathbourne Road, Balham, S.W.

DE BRENT, MORTIMER JOHN, 17, Victoria Road, Clapham Common, S.W.

DENNE, FRANCIS VINCENT, 72, Blythe Road, West Kensington, W.

DEWSNAP, WILLIAM, 38, Shaftesbury Road, Hammersmith, W.

DOWN, GEORGE, 6, Ellison Terrace, Streatham Common, S.W.

DOWNES, GODKIN, 20, Bucklersbury, E.C.

FLEMING, WILFRID LOUIS REMI, 18, Dennington Park Road, Hampstead, N.W.

FOOTE, VIVIAN PERCIVAL, Leigham Court Road, Streatham, S.W.

FORSBROOK, WM. HY. RUSSELL, 139, Buckingham Palace Road, S.W.

FORSTER, HERMANN JULIUS, Malvinas, Brockley View, Forest Hill, S.E.

FOSTER, WILLIAM J., 25, Wickham Road, Brockley, S.E.

FOULDS, FRANCIS H., 57, Haydon Park Road, Wimbledon, S.W.

FRANCIS, WILLIAM VARE CHALMERS, Westminster Hospital.

FREMLIN, HEAVER STUART, Government Lymph Laboratories, Chelsea Bridge, S.W.

GANDY, WILLIAM, "The Hill Top," Central Hill, Upper Norwood, S.E.

GLASSINGTON, CHARLES WM., 6, Pelham Crescent, South Kensington, S.W.

GODWIN, WILLIAM HENRY FRED. FENN, 89, Asylum Road, Peckham, S.E.

GOODSON, WILLIAM, Buckston Villas, 58 and 60, Leytonstone Road, Maryland Point, Stratford, E.

GOSSAGE, ALFRED MILNE, 54, Upper Berkeley Street, Portman Square, W.

GRACE, WILLIAM GILBERT, St. Andrews, Lawrie Park Road, Sydenham, S.E.

GREENE, HY. BERTRAM BLODWELL, Stoneleigh, Earlsfield Road, Wandsworth, S.W.

GRIGGS, WM., Easton Lodge, Tressillian Crescent, St. John's, S.E.

GUBB, ALFRED SAMUEL, 29, Gower Street, W.C.

HADWEN, AURELIUS ST. JOHN, 88, Stamford Street, S.E.

HAGUE, JOHN LOCKE, Northern Fever Hospital, Winchmore Hill, N.

HAINS, WM. ROBT. HALL, 1, Aschurch Terrace, Shepherd's Bush, W.

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HAYDON, F., Apothecaries' Hall, Blackfriars, E.C.

HAYNES, J. R., 25, Cathcart Road, South Kensington, S.W.

HEARD, J., 267, Crystal Palace Road, East Dulwich, S.E.

HEPBURN, JOHN, Aberdeen House, Queen's Terrace, and 3, Bridge Road, Hammersmith, W.

HOOK, W., 124, Landor Road, Clapham, S.W.

HUGHES, THOMAS C., North Western Hospital, Haverstock Hill, N.W.

HUMPHREYS, CHARLES STYLE, 50, Fairholme Road, West Kensington, W.

JACKMAN, CHARLES HOWARD, 69, Kyverdale Road, Stamford Hill, and 37, Victoria Road, Stoke Newington, N.

JACQUES, EDWIN, 206, Brixton Road, S.W. (retired.)

JAMES, GEO. BROOKSBANK, 1, Carlisle Mansions, Victoria Street, S.W.

JAQUET, JOHN LEWIS, Stones End House, Southwark, S.E.

JOHNSON, JOHN JAMES.

KEMPSTER, FELIX CHARLES, Oak House, 59, Bridge Road, Battersea, S.W.

KEMPSTER, C. R., 1, Albert Road, Battersea Park, S.W.

KEMPSTER, WM. HY., 1, Albert Bridge Road, Battersea, S.W.

KING, FRANK RAYMOND, Peckham House Asylum, Peckham, S.E.

LARDER, HERBERT, Whitechapel Infirmary, Vallance Road, N.E.

LECKIE, WALTER JAMES, Grosvenor Club, New Bond Street, W. (retired.)

LEVY, OSCAR LUDWIG, 1, Talbot Mansions, Museum Street, W.C.

LOWNDES, DOUGLAS VICTOR, 27, St. James Street Mansions, Buckingham Gate, S.W.

MACLEOD, CHARLES E. A., 2, Pembroke Crescent, Bayswater, W.

MACLEOD, R. A., Westminster Hospital.

MCKINLAY, JOHN ROBERT, 1, Gordon Road, Peckham, S.E.

MARCH, JOHN, Woodlawn, Spencer Park, New Wandsworth, S.W.

MARIN, FERDINAND B., 38, Rosoman St., E.C.

MILLS, HERBERT HY., 21, St. Mary Abbot's Terrace, Kensington, W.

MOORE, GEORGE LENNOX, 6, Hertford Street, Mayfair, W.

MOREY, JAS. W., 26, Walpole Street, King's Road, S.W.

MORGAN, HERBERT LAURENCE, 20, De Laune Street, Kennington Park, S.E.

MORRIS, HENRY, Westminster Hospital.

MORTIMER, JOHN DESMOND ERNEST, 23, Cheyne Walk, Chelsea, S.W.

NETTLETON, HARRY THOMAS, 4, Wisteria Road, Lewisham, S.E.

NEWBERY, WM. FREDK. HOYLE, St. Helen's, 109, Cazenove Road, Stoke Newington, N.

NITCH-SMITH, REGINALD, 58, New Bond Street, W.; or 6, Evelyn Mansions, Queen's Club Gardens, W.

NORMAN, R. H., 328, Upper Street, Islington, N.

NORTON, JOHN, 54, Queen Anne's Gate, and Iddesleigh Mansions, Caxton Street, S.W.

NOWELL, GEORGE HAROLD, Clarendon House, Mortlake, S.W.

OAKMAN, JOSEPH JOHN, The Priory, High Street, Battersea, S.W.

ORMSBY, GEORGE HENRY, 12, Benbow Road, Hammersmith, W.

ORR, VIVIAN BERNARD, Westminster Hospital, S.W.

OSBORN, ED. COLLET, Kensington Infirmary, S.W.

PALMER, FREDERICK STEPHEN, Compton Lodge, East Sheen, S.W.

PARKHOUSE, H., 86, Carlton Vale, Kilburn, N.W.

PEAKE, ARTHUR EDWD., 50, Bell Street, Henley-on-Thames.

PEARSE, FRANCIS JAMES, 75, Warwick Sq., S.W.

PEARSE, GEO. EDMUND LEGGE, 15, Queen's Mansions, Victoria Street, S.W.

PEARSON, H. B. A., Ravenscraig, 36, Honeywell Road, Wandsworth Common, S.W.

PENNY, W. R., 50, Halliford St., Canonbury, N.

POWELL, WM. WYNDHAM, 16, Old Burlington Street, W.

PRIDMORE, CAMPBELL, WM., 116, Jamaica Road, S.E.

PRITCHARD, EDWARD JOSIAH, "Branksome," Wandsworth Common, S.W.

PULLING, HERBERT JOHN, 89, Trinity Road, Upper Tooting, S.W.

RADMORE, G. R.

RIX, FRANCIS WM., 62, Holmdale Road, West Hampstead, N.W.

ROBINSON, EDWIN WILLIAM, 169, High Street, Homerton, N.E.

RUDD, ARTHUR, 493, Old Kent Road, S.E.

RYALL, CHARLES, 51, Queen Anne Street, Cavendish Square, W.

RYALL, EDWARD CANNY, 30, Harley Street, W.

SANDERSON, EDGAR STANLEY, Westminster Hospital.

SCOTT, HENRY THOMAS, 31, Buckingham Palace Road, S.W.

SILAS, WALTER BISCOMBE, Dunraven, Gleneagle Road, Streatham, S.W.

SOUTHAM, STANLEY, 8, St. Andrew's Road, West Kensington, W.

SPICER, FREDERICK, 14, Carleton Road, Tufnell Park, N. (retired).

SPITTA, EDMUND JOHNSON, Ivy House, Clapham Common, S.W.

STONHAM, HY. A., 30, Albert Square, Ratcliff, E.

SYERS, HENRY WALTER, 75, Wimpole Street, W.

TAPSON, JOSEPH ALFRED, Holmwood, Crescent Grove, Clapham Common, S.W.

TILY, JAMES, 8, Brackley Road, High Road, Chiswick, Middlesex.

TIPPETT, S. G., 2, Queen Anne's Grove, Bedford Park, W.

TWEMLOW, W. A. F., 45, Avenue Rd., Acton, W.

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WATTS, HORACE NEWBEGIN, National Liberal Club, Whitehall Place, S.W.

WATTS, ALGERNON NEWBEGIN, 37 & 39, Essex Chambers, Essex Street, Strand, W.C.

WILLS, WILLIAM ALFRED, 29, Lower Seymour Street, Portman Square, W.

WILSON, GEORGE, Rutland Villas, Romford Road, Forest Gate, E.

WILSON, F. K., 2, Queen Anne's Gardens, Bedford Park, Chiswick, W.

WISE, CHARLES H., Dunheved, Walthamstow.

WRIGHT, JOHN SIDNEY ALBERT, 153, Upper Kennington Lane, S.E.

YEARSLEY, PERCIVAL M., 33, Weymouth Street, Harley Street, W.

PROVINCIAL, SCOTLAND, AND IRELAND.

ADAMS, THOMAS RUTHERFORD, 171, St. James' Road, East Croydon.

ARCHER, ROBERT KENDRAY, St. John's, West Worthing, Sussex.

ASHENDEN, CHARLES, Hill View, Berlin Road, Clive Vale, Hastings.

AVERILL, ALFRED, Bank House, Longton, Stoke-on-Trent.

BAILEY, THOMAS W., Belgrave Place, St. Mary Cray, Kent.

BALE, WILLIAM, 130, Hampden Place, Wellington Road North, Stockport.

BAMPTON, AUGUSTUS H., "Millbrook," Wells Road, Ilkley-in-Wharfedale, Yorks.

BARLOW, HERBERT CECIL, Park House, Blaby, Leicestershire.

BARRETT, WM. A. H., Ottery St. Mary, Devon.

BARTON, JAS. E., Surrey Co. Asylum, Brookwood.

BATTERHAM, JOHN WILLIAMS, Bank House, Grand Parade, St. Leonard's-on-Sea.

BAXTER, JAMES FLEMING, Sebdon Castle, Craven Arms, Salop.

BEADLES, FERDINAND, Broadway, Worcestershire.

BLOMFIELD, SAMUEL BARTLETT, Hurst Green, Sussex.

BOWMAN, ROBERT MOORE, 8, Park Street, Ripon, Yorkshire.

BOX, WM. HY., Churchill, Somerset.

BRYSON, L. HORNER, Melbourne House, Osmaston Road, Derby.

BURT, CYRIL CECIL BARROW, Snitterfield, Stratford-on-Avon.

BYLES, JOHN BEUZEVILLE, Henley-on-Thames.

CADE, H. M., Langworth, Lincoln.

CANE, HOWARD, The Gables, Belvedere, Kent.

CARR, ALEXANDER, Placerville, 150, Wells Road, Bristol,

CATTERALL, CUTHBERT GEORGE, Rainham, Essex.

CAUDWELL, EBER, Harleston, Norfolk.

CHARSLEY, ROBERT STEPHEN, "The Barn," Slough, Bucks.

CHURCHILL, A. L. M., Co. Asylum, Lancaster.

CLARKE, RICHARD, Warbleton, Hawkhurst, Sussex.

COLEMAN, ALFRED THOMAS, 51, Highfield Street, Leicester.

COLLIER, ALFRED HY., Stansfield House, Cranford, Hounslow, Middlesex.

COLMER, CORNELIUS AGRIPPA, 6, Frederick Place, Weymouth.

COLTART, GUY HEMMING, Ashbourne House, Epsom.

COOK, LEWIS, 13, St. John's Terrace, Earlswood, Redhill.

CORY, WM. HOWARD, Sunningdale, 29, Redland Grove, Redland, Bristol.

COTTON, HY., HUGH POWELL, Old Vicarage House, Westerham, Kent.

COURTEEN, RAYMOND, Redbrook House, near Monmouth.

COX, EDWARD OWEN, Langlands, Cleobury Mortimer, Salop.

CROPP, EDWARD LYCETT, 101, Caversham Road, Reading.

CUTHBERT, WILLIAM HAWKINS, Turret Lodge, Frinton-on-Sea, Essex.

DAKEYNE, THOMAS EDWARD, Stockwell Street, Leek, Staffordshire.

DAVIDSON, CHRISTOPHER MONTGOMERIE, Eglinton House, Branston, Lincoln.

DAVIES, JOHN, Tanyfron Villa, Aberayron, Cardiganshire.

DEGARDINS, ALFRED, French Consulate, Newport, Mon.

DRAKE, EDWARD COURTNEY, Grange House, Spennymoor, Durham.

DURANCE, WILLIAM A., "Blackburn," Stanley Street, Bedford.

EAGER, THOMAS CAWLEY, "Abingdon," Heathside Road, Woking, Surrey.

EASTE, WILLIAM ALFRED, Hanslope, Bucks.

EDDOWES, CHARLES, Maddington, Devizes, Wilts.

EMMERSON, WM. LINDSEY, Ruding Villa, The Fosse, Leicester.

ERRAUT, HAROLD JOHN, The Beeches, St. Saviour's, Jersey.

EVANS, A. H., 2, Gnoll Park, Neath, South Wales.

FARRANT, C., North Street House, Taunton.

FARRANT, MARK, Beaufort House, St. Thomas, Exeter.

FERGUSON, DANIEL WM., Newport Brough, Yorkshire.

FINCH, H. J., Crofton, Sudbury, Suffolk.

FORSAYETH, JOHN RICHARD MARTIN, 93, St. George's Road, Great Yarmouth.

FOSBROKE, GEORGE HAYNES, Rose Place, near Worcester.

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FOX, JOSEPH FRANCIS, Wilmount Castle, Queenstown.

FRANKS, CHARLES, 22, Bede Burn Road, Jarrow-on-Tyne.

FRY, JOHN MARCHANT, The Gables, Cranleigh, Surrey.

GARMAN, JOHN CORNELIUS, Pleydells, Warbleton, Hawkhurst, Sussex.

GARRETT, CHARLES DUDLEY, 37, Huddersfield Road, Dewsbury, Yorks.

GENGE, G. F. S., Rogate Lodge, Bournemouth.

GOSS, TREGENNA BIDDULPH, 1, The Circus, Bath.

GOSSAGE, WILLIAM HERBERT, London Street, Chertsey.

GRAY, HERBERT EDWD., 19, Beaumont Street, Oxford.

GREENWOOD, THOS. FRED., 21, Linton Road, Hastings.

GRESSWELL, GEORGE, 395, Cleethorpes Road, Grimsby.

GRIFFITHS, WILLIAM ARTHUR, Wonston, Micheldever, Hants.

GUBBIN, W. B. T., Surbiton Lodge, Redland Grove, Redland, Bristol.

HALPIN, RICHARD FREDERICK, 15, Ferry Bank, Arklow, Co. Wicklow.

HANCOCK, G. C., 24, Harmer Street, Gravesend,

HARDWICK, ARTHUR, Prospect House, Newquay, Cornwall.

HARPER, HY. CECIL, Stowmarket, Suffolk.

HARPER, THOMAS EDWARD, Holloway Sanatorium, St. Ann's Heath, Virginia Water.

HARRIS, GEORGE JAMES, Anstey, Leicester.

HARRIS, JOHN CHAS., Waddon Road, Croydon, Surrey.

HARRIS, SPENCER CLABON, St. Mary's Street, Ely, Cambridge.

HARRISON, ARTHUR WM., Stonley House, Mossley, near Manchester.

HARVEY, CHRISTOPHER, Fleet Surgeon (retired), Park View, Green Lane, Eltham, Kent.

HAYWARD, THOMAS ERNEST, Haydock, St. Helen's, Lancashire.

HEELAS, WALTER WHEELER, 2, Clifton Terrace, Wolverhampton.

HOOD, ALEXANDER H. M., 13, Calthorpe Road, Banbury.

HUGHES, EDWARD LUCAS, Hahnemann Hospital, Hope Street, Liverpool.

HUGHES, MORGAN, East Bridge, Addiscombe Road, East Croydon.

HUNT, ARTHUR HY. WM., Melford Lodge, Tettenhall Road, Wolverhampton.

HUXLEY, FRANK EARLE, 23, Waterloo Street, Birmingham.

HYATT, JAMES TAYLOR, Shepton Mallet and Evercreech, Somerset.

HYDE, GEO. EDWIN, 39, Forgate Street, Worcester.

KENNARD, DAVID, Lambourn, Berks.

KENNARD, DAVID GERALD, Faringdon, Berks.

KENNARD, THOMAS ATHERTON, Kingswood House, Lambourn, Woodlands, Berks.

KING, JOHN CHARLES, Montsorrel, Barry, Glamorgan.

LAMBERT, ERNEST C., Darenth Asylum, Dartford, Kent.

LAMBERT, FREDERICK SAMUEL, Balgowan, Newland, Lincoln.

LAWTON, HENRY HERBERT ALFRED, 98, High Street, Poole, Dorset.

LEES, FRED. ARNOLD, Leeds.

LEGGE, WILLIAM, 45, Friar Gate, Derby.

LEGGE, WILLIAM HENEAGE, Ringmer, near Lewes.

LEWIS, LLEWELLYN, 22, London Road, Neath, Glamorgan.

LITCHFIELD, HY. ROBT., Campbell, Fulton Villas, 61, Arragon Road, Twickenham, Middlesex.

LITTLE, FRED., Aylsham, Norwich.

LITTLEHALES, A. G., Clovelly, Bexley Heath.

LIVERMORE, WM. BARCLAY, Cleckheaton, Yorks.

LONG, ARTHUR, 1, Priory Road, Dover.

LONG, J. R., 1, Priory Road, Dover.

LONG, CHAS. FRED., The Manor House, Burmington, Shipston-on-Stour, Warwickshire.

LONG, HY. PLATER, The Firs, Crowborough, Sussex.

LOVEGROVE, ARTHUR C., North View, Ripon, Yorks.

LOWNDS, CHARLES JAMES, 16, Cardiff Road, Luton, Beds.

LOWNDS, HENRY ARTHUR, 46, Hallgate, Doncaster.

MACCABE, SIR FRANCIS XAVIER FREDK., Park Cottage, Kilgobbin, Co. Dublin.

MACDONOGH, WM. FRED., Twickenham, Middlesex.

MANDER, PERCY ROBT., Dartmoor Convict Prison, Princetown, Devon.

MATTHEWS, JOHN COX, Fitzwilliam Hall, Cambridge.

MATTHEWS, SIDNEY PHILIP, Crawley, Sussex.

MAY, THOMAS, Fewcott House, Bicester, Oxon.

MEGGS, THEODORE HUGH E., "Pinwell," Slough, Buck

MILLER, HENRY Hartland, Bideford, Devon.

MOCKETT, GEORGE THORNTON, Stone Road, Longton, Staffs.

MOORE, EDWIN, 7, Winkley Square, Preston Lancashire.

MOORE, WALTER, Stourport, Worcestershire.

MORGAN, FRED., Uffculme, Devon.

MORTON, RICHARD JOHN, Aylsham, Norfolk.

MOWAT, GEORGE, The Cottage, Belmont Road, St. Albans (retired).

MUNYARD, THOMAS GUILLAUME, Coombe Bury House, Kingston Hill, Surrey.

NELSON, JOSEPH, Clare House, Baker St., Hull.

NICHOLLS, FREDERICK, 3, Coombe Road, Croydon, Surrey.

NORMAN, GEORGE, High Road, Buckhurst Hill, Essex.

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TAYLOR, WALLACE ATKINSON, 1, Pavilion Terrace, Scarborough.

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